June 1961

New source of imports ahead?

Two mills blueprint QC

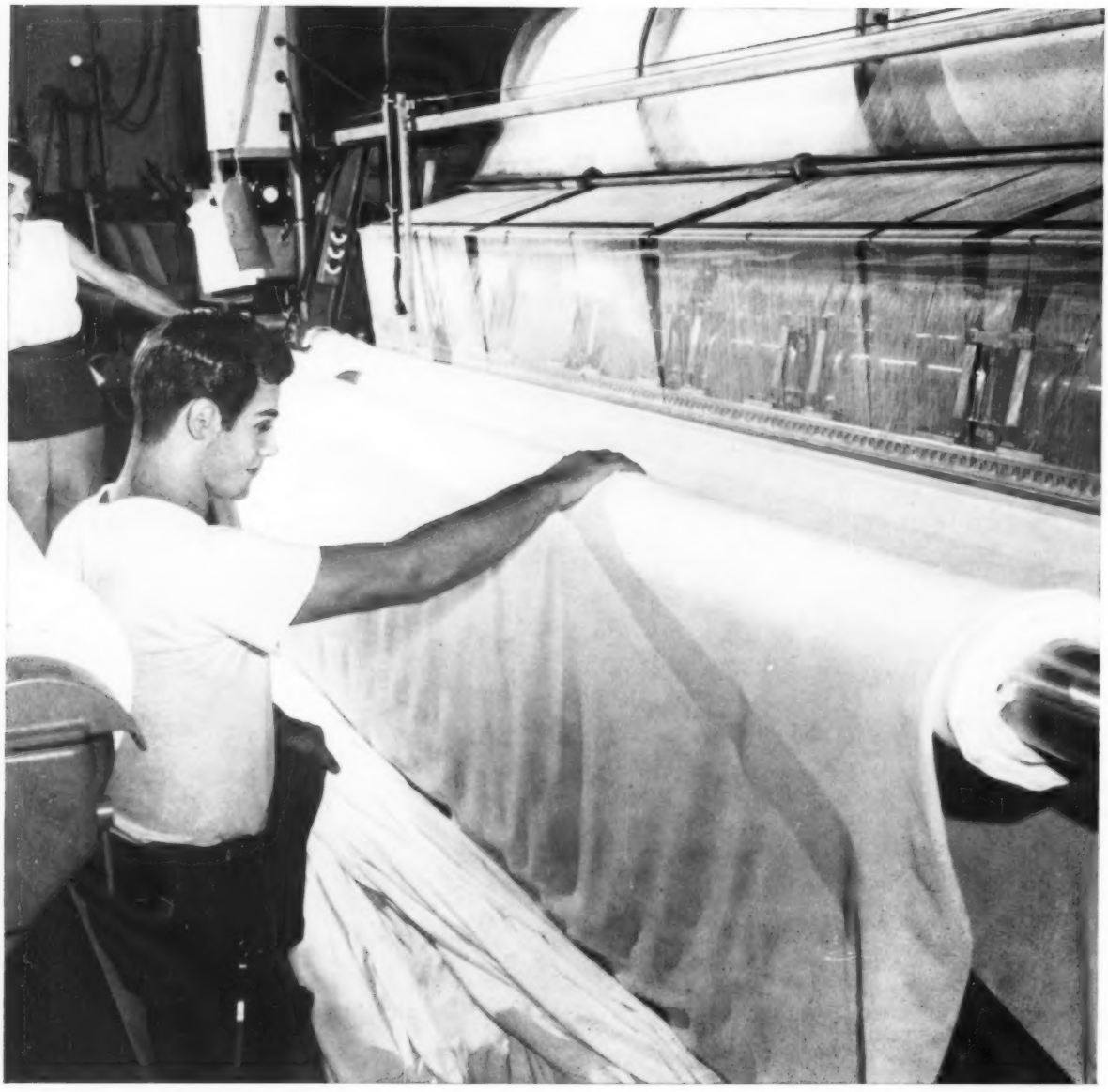
Short-fiber problem in cotton

4,000,000 yards of quality

Complete contents on page 4

Textile Industries

a W. R. C. Smith publication formerly "Cotton" fifty cents per copy



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MILLCOT anti-spatter oils prove their worth at inspection time — in yards and yards of spotless production. By clinging closely to fast-moving parts, they reduce oil stains on fabric to a minimum. Millcot "K" grades are tacky to prevent excessive drip and to reduce oil consumption on looms and other textile machinery. Millcot DX, an ideal top-roll bearing oil, is not stringy and does not form "threads" which may stain yarn during oiling. Effective anti-wear agents maintain lubrication under heavy pressure and shock loading in looms.

NEBULA® EP multi-use grease replaces many single-purpose lubricants. It does an outstanding job in the hot, heavily loaded bearings of slasher, dryer, and calender rolls; provides extreme-pressure protection for loom gears and bearings.

Esso Sales Service Laboratories are always ready to help solve your lubrication problems. Call your experienced Esso Representative, or write to us at 15 West 51st Street, New York 19, New York.

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QUALITY and ECONOMY ■ Quality of product . . . economy of operation . . . are the two big reasons why Draper Bobbins are the accepted standard for excellence in textile mills throughout the world. ■ Engineered by men who know bobbin requirements . . . the use of the finest raw materials . . . consistent uniformity in manufacture . . . proven finishes . . . add up to Quality Draper Bobbins designed to give the best possible service.

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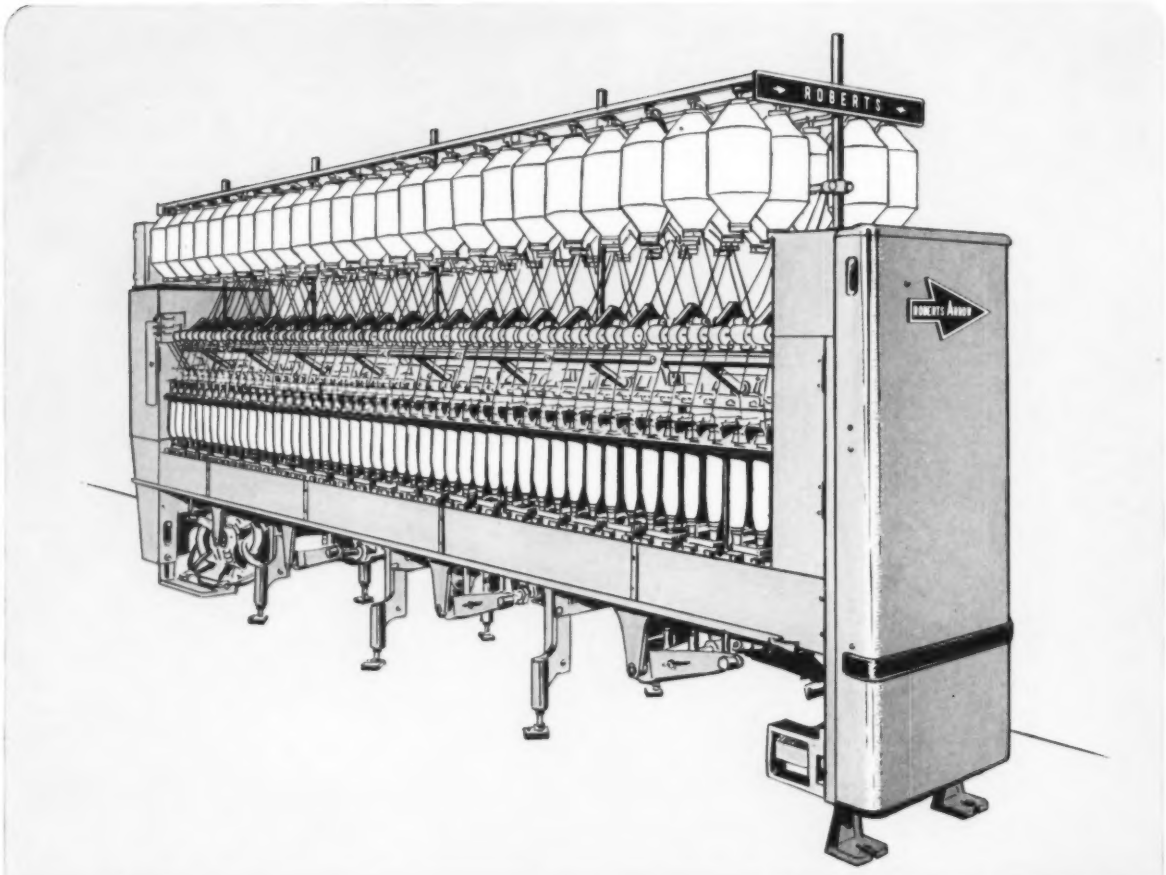


ROBERTS ARROW

ADVANCED ENGINEERING DESIGN
ATTRACTIVE LOW PRICE
PRACTICAL MILL OPERATION

1200 NEW ROBERTS ARROW Spinning Frames with some 380,000 spindles have been installed in mills since their introduction four years ago; dramatic testimony that Arrow Spinning does the job to mill satisfaction!

RUGGED, ALL BALL BEARING and free of gadgetry and frills, new Arrow Spinning has been refined and streamlined, and engineered for peak performance and dependability. Many technological improvements have been incorporated.

HIGHEST YARN QUALITY! With new FC Drafting cotton system spinning, Arrow Frames consistently spin stronger, more even yarns. Proper fiber control, gripping and weight assure superior yarn quality.

INCREASED SPEEDS! Spindle speeds to 15,000 r.p.m., dynamic balancing of all components, and maximum use of ball bearings provide increased production and economy, with smooth and dependable performance.

WIDER VERSATILITY! Coarse or fine yarns from 2s to 120s count, cotton or synthetics and blends, and a broad range of drafts from 10 to 60 are successfully handled. New Arrow Spinning spins short or long staple cotton, and synthetics from 1 1/16" to 3". Changes in fiber, yarn number, draft, twist and bobbin build are quickly accomplished.

REDUCED CLEANING, MAINTENANCE! Strictly functional, new Arrow Spinning has been engineered for trouble-free operation with reduced cleaning and maintenance. Simplification of components, and fewer parts provide quick, easy cleaning.

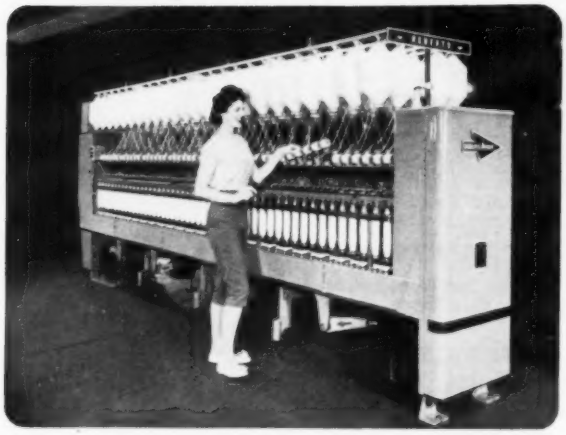
ROBERTS COMPANY
SANFORD, NORTH CAROLINA

For further information use Handy Return Card, Page 187

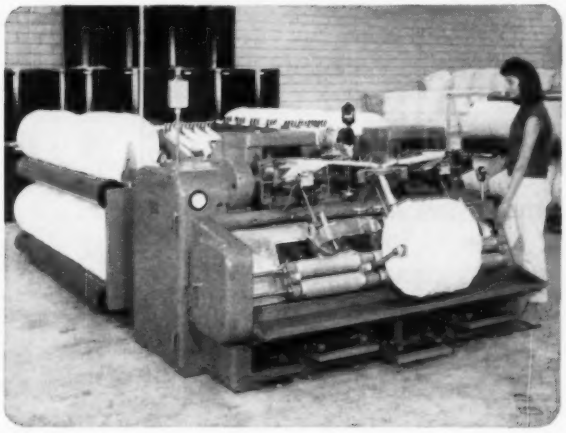
ROBERTS

YARN MAKING MACHINERY

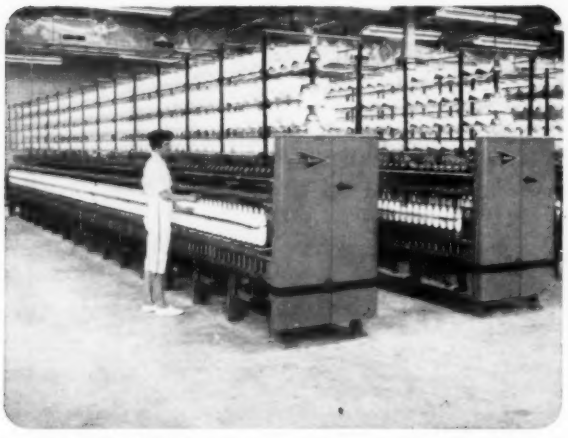
for Cotton, Worsted, or Long Fiber Systems



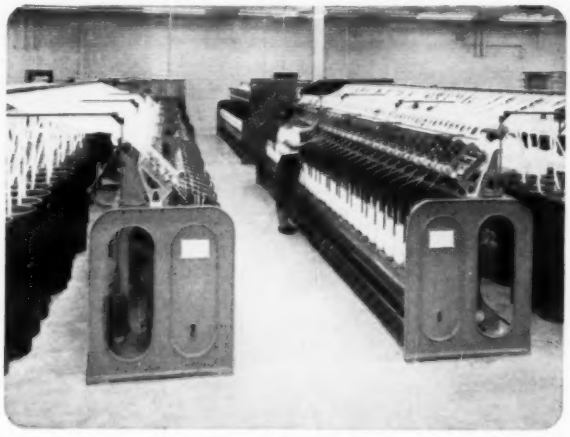
ROBERTS ARROW SPINNING for both cotton system and long fiber system yarn spinning for natural and synthetic fibers and blends. High speed, all ball bearing, big package Arrow Spinning Frames in 25-inch or 36-inch width. Exceptional flexibility and simplicity of operation in the manufacture of improved quality yarns at reduced costs and modest initial investment.



ROBERTS-TEMATEX worsted system preparatory machines, including ParaBlenders, ParaDrafters and AutoEveners, are rugged, high performance machines for pinning, parallelizing, drafting and blending worsted and synthetic fibers prior to roving and spinning, and in top making plants. AutoEvener automatically and instantaneously corrects delivered sliver weight to within plus or minus 1%.



ROBERTS TWISTERS for plying yarns are completely ball bearing equipped and designed for high speed ring twisting operations. 25- or 36-inch frames. Up to 3½-inch rings and 12-inch bobbins. Package weights 1¼ pounds on cotton, ¾ to 1 pound on worsted.



ROBERTS ROVING FRAMES are ball bearing rebuilt and feature all-new heavy duty ball bearing Roberts Double Apron Drafting Systems for cotton, short staple or long fiber synthetics, worsted and blends. 10x5 and 12x7 packages. Provisions for double headed spools.

Simplicity of design, rugged construction and high speed ball bearing operation are the trade marks of all Roberts Company machinery. Roberts also supplies rebuilt spinning frames and modernization change-overs for mills' existing machinery.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA

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Textile Industries

The Textile Management

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THIS MONTH'S COVER

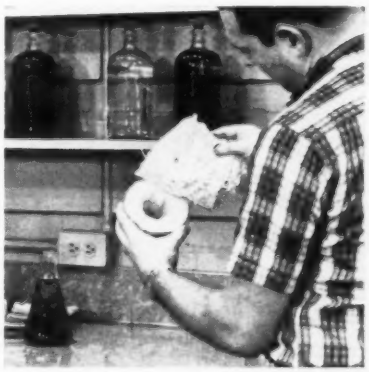
Two Georgia mills—a fully integrated operation and a sales yarn mill—give complete details of their quality control programs. See page 73.

IN TI NEXT MONTH

■ TEXTILE INDUSTRIES for July will launch the first of a series of articles for wool mill men, written by Edwin G. Sutcliffe, chief chemical engineer for Samuel Hird & Sons, Inc., Garfield, N. J. The relationship between ends down and wool grade is the subject of the first article.

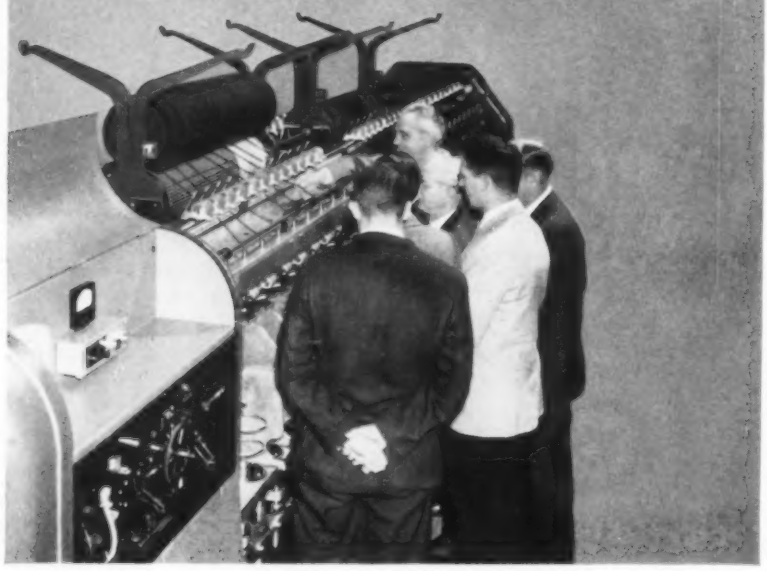
The fifth article in Norbert Enrick's series on Modern Textile Management will continue the discussion of Evolutionary Operation, showing how it can be used to select the best processing conditions when there are many variables to consider.

And for the cotton mill man, there will be presented details of how centralized opening and preblending has proved a success at Carolina Mills, Maiden, N. C.; plus results of a new study of the effects of ginning conditions on the spinning properties of the cotton fiber.



Cantaloupes in the dyehouse? Yes, sometimes. TI for July tells when.

D & F "Coordinated Production"
PROVES BY
Selection and Demonstration



PROOF FINAL of improved operation from new equipment comes from actual in-the-mill operation under all existing factors of stock, work-load, product requirements, cost ratio, mill conditions.

PROOF IN ADVANCE can often be obtained on our own D & F Test Model set-up. Let our technicians at North Andover consider your specifications, make detailed recommendations and actually demonstrate their effectiveness to you or your production representative by using samples of your own stock.

D & F's Comprehensive line of woolen system processing machinery includes the one or more machines best for your particular job. For example, it will pay you to investigate the following: a) the new D & F 12-bar Mixing Picker, b) the new D & F Fiber Blending Opener, c) the new D & F "Compact" all metallic 2-cylinder Card, d) the D & F Unitized Opening and Blending System, e) the D & F 2-cylinder Model L 84" Carpet Card, f) the D & F 3-cylinder Model L Woolen Card, g) the new D & F Model H Ring Spinning Frame.

Call your Davis & Furber man, present your problems or outline your ideas for production improvement. You can count on his counsel and confidence.

DAVIS & FURBER
MACHINE COMPANY
TEXTILE MACHINERY DESIGNERS AND MANUFACTURERS
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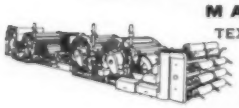

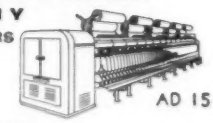

AD 15-3

Member — American Textile Machinery Association

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SHORTS & REMNANTS

Could-Be-Worse Dept.

Cheer up—the textile industry could be in worse shape than it is, and once it *was:*

"A manufacturing company [Graniteville Mfg. Co.] needing a large quantity of lard from which to press oil, offered a yard of sheeting or a yard of osnaburgs for a pound of lard. But it would also exchange for food, giving a yard of sheeting or osnaburgs for a pound of bacon, a yard and a half for a bushel of corn or peas, and thirty yards for a barrel of flour.

"A month later it was offering forty yards for a barrel of flour, three yards of osnaburgs for a gallon of syrup, and two and a quarter of sheeting for a bushel of corn or peas. The Georgia Relief and Hospital Association announced, that by the liberality of the Augusta Factory Co. it was enabled to offer fifteen yards of light sheeting for one blanket, or two comforts for three blankets."

This was in January, 1864, as described in "A History of the People of the United States During Lincoln's Administration," by John Bach McMaster, who was quoting ads in the *Charleston* (S.C.) *Courier*. And, incidentally, Graniteville must have gotten the lard, because it's still in business. And today's industry may get the quotas it wants, too; at least President Kennedy's recent half-a-loaf is a start.

Likes "Secretary"

". . . express my sincere appreciation for the nice pocket "Secretary" . . . This book contains many valuable items which I am sure I shall be referring to often."

A. S. HARTSELL
Manager, Industrial Plant
J. P. Stevens & Co., Inc.
Rock Hill, S. C.

"My Private Secretary" (its full name) is a mill data book and note book. It's available with a subscription to TEXTILE INDUSTRIES; for details, write our circulation department.

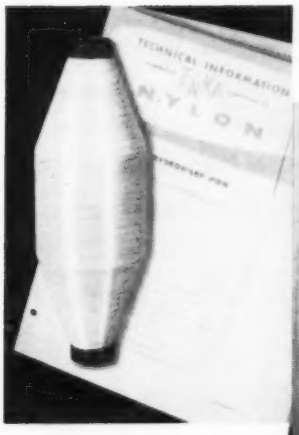
Continued on page 8

ENKA

keeps its eye on the future... its yarns in the news!

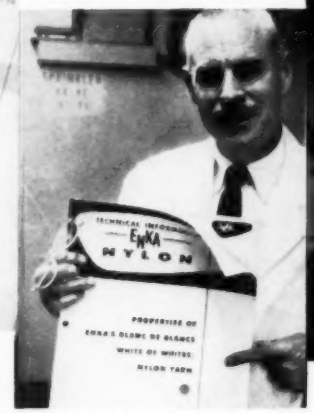
Day after day, season after season, ENKA produces fine, modern nylon and rayon yarns that make the news for converters, cutters and retailers.

Here are some recent news makers!



News! The Enka nylon **Hydrowarp* Pirn** is designed to unwind yarn from a parallel plane. In operation it increases net yarn weight per pirn, improves unwinding tensions, actually reduces costs in texturing, warping, knitting, throwing. Write for Technical Bulletin NM-4 on Enka's nylon Hydrowarp pirn. Marketing Technical Dept., American Enka Corporation, Enka, N. C.

*Trademark Whitin Machine Works



News! Enka's **Blanc de Blancs™ Nylon**, the dazzling white yarn created especially for foundations and intimate apparel. The whiteness is *yarn-deep* in this wonderful nylon, resulting in uniformity throughout a garment or a line. Write for Enka Technical Bulletin NM-2 for more facts on Blanc de Blancs nylon yarn. Marketing Technical Dept., American Enka Corporation, Enka, N. C.

News! Enka nylon for **Sheers** is made in a larger filament size for a smoother, more versatile hand. It creates softer chiffons, more supple organzas, crisper organdies. And Enka nylon's affinity for dyes results in truer color clarity. Find out more about Enka nylon yarn for sheer fabrics. Call Enka Merchandising in New York, 350 Fifth Ave., PE 6-2300 or the Enka sales office nearest you.

Nylon sheer dress by Fred Perlberg in an Avita fabric.

News! Enka **Softglo®** rayon is a soft, low-luster yarn for decorator and upholstery fabrics. Softglo rayon brings rich beauty and lasting strength to luxurious fabrics designed for the home. For full details on Enka Softglo rayon, contact Enka Merchandising at 350 Fifth Ave., New York 1, N. Y., PE 6-2300, or the Enka sales office nearest you.

Chair by Sam Moore in a Bartson fabric.

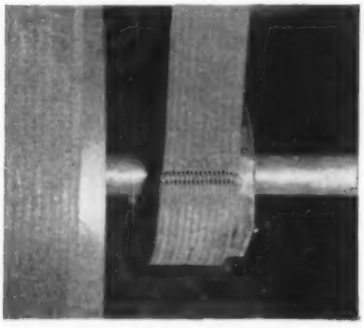
American ENKA Corporation, Enka, N. C. • Producer of nylon • rayon • yarns • fibers

NEW YORK OFFICE: 350 Fifth Ave., New York 1, N. Y. • DISTRICT SALES OFFICES: Greensboro • Providence

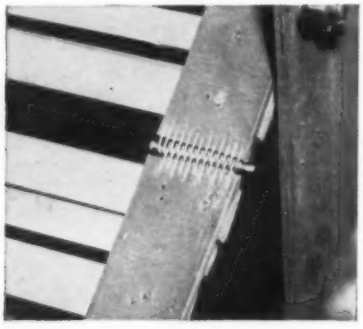
"ENDLESS APRONS ARE HARD TO INSTALL"

says E. M. HYDE, Project Engineer at Proctor & Schwartz, Inc.

A complete batt making line used in the manufacture of cotton batt for top quality mattresses. The unit is designed and built by Proctor & Schwartz of Philadelphia, Pa.



Close-up of Clipper lacing used on drive belt of feed in batt making line



Close-up of Clipper lacing used on a traveling apron in the line

CLIPPER Joints ease installation problem, are as flexible and durable as the belt itself

Feed belts and drive belts are easy to install when Clipper laced. Joints as smooth and durable as the belt itself are easily made by one man using Clipper method. Clipper lacers develop up to 45,000 pounds of pressure to imbed specially designed Clipper steel wire hooks flush with the belt. The strain is evenly distributed across the width of the belt so that the joint is smooth and durable. It operates well on both small and large diameter rollers.

When you have two ends to join, chances are you can join them easier with Clipper hooks and lacers. Any type of belting material in various widths and up to 13/32 inch thick can be laced faster and better by Clipper.

For more information — Detailed product information and case history examples of Clipper machine lacing benefits are contained in Bulletin No. 157. Send for your free copy today.

Ask your Industrial Distributor for Clipper Products

Clipper BELT LACER COMPANY

980 Front Ave., N. W., Grand Rapids 2, Michigan

SHORTS & REMNANTS

(from page 6)

Too Many Dozens

"I read with great interest the article on Hanes' new Weeks Division plant in your April 1961 issue. While it is well written and very informative it appears that the headline title to the article [50,000,000 Dozen] is impossible to obtain with other figures listed . . . 5,000 single feed machines would make 5,000,000 dozen pairs annually and 5,000 two feed machines would produce 7,500,000 dozen pairs annually. . . . If . . . figures are correct please let us know as we would like some of these high speed machines."

PAUL M. FRYER
Assistant Manager
Willcraft Hosiery Mills, Inc.
Williamsport, Maryland

Sorry, Hanes does not have any super-machines—the headline should have read "50,000,000 **Pairs**." As a matter of fact, the whole seamless industry only produced 35,336,655 dozen pairs of nylon hosiery last year, as we report elsewhere in this issue.

► When S & R, Jr., needed some new blue jeans recently, Mrs. S & R bought some with this label:

MANUFACTURED BY
Billy the Kid
IN THE
U.S.A.
AN AMERICAN PRODUCT MADE IN AMERICA OF AMERICAN MATERIALS TO AMERICAN STANDARDS OF QUALITY.

We are also happy to note in a recent issue of *The Pepperell News Sheet* that Pepperell Mfg. Co. is now using the phrase "Woven in U.S.A." on all tickets, wraps, and merchandise.

Polypropylene, A to Z

"We are interested in finding articles on polypropylene and wonder whether in past issues you had any . . ."

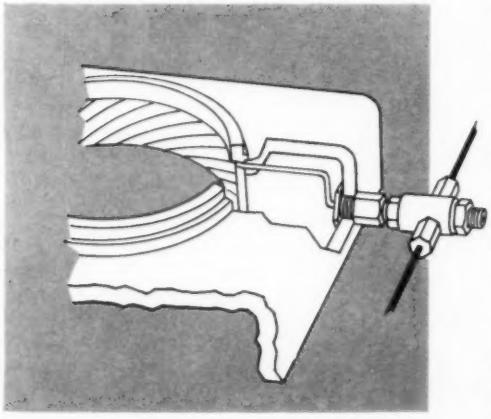
W. R. KOBELT
Vaucanson Silk Mills, Inc.
Port Jervis, N. Y.

We sent a copy of Aldo Fior's article, "The Polypropylene Story,"

For further information use Handy Return Card, Page 187

ALEMITE FULLY ADJUSTABLE RING LUBRICATION SYSTEM

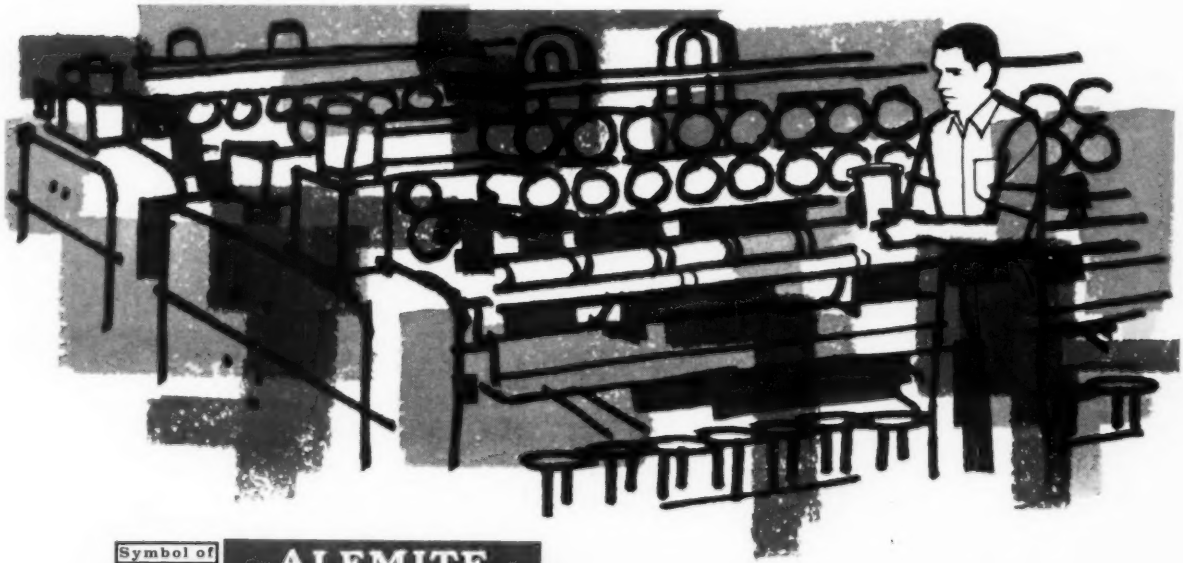
less ends down
cuts product spoilage
equalizes tension
increases ring life
reduces horsepower



This accurate, economical, low-pressure lubrication system increases production because it is fully automatic. Machines need never shut down to be lubricated. It maintains constant, positive lubrication—allows machines to run at higher speeds. Product spoilage is reduced because accurately dispensed amounts of lubricant are so minute, the traveler does not "throw" lubricant.

In addition, this Accumite system completely eliminates leakage between the ring and the frame . . . assuring neater, cleaner lubrication. It meters out positive amounts of lubricant to every ring on the frame rail to equalize tension, provide uniformity of thread—reduce lubricant consumption and prolong ring life. Accumite is adaptable to all lubricated rings.

Benefit from the many advantages by equipping your spinning and twister frames with an Alemite Accumite System. When ordering new frames specify Alemite. *Write today for additional information and free catalog #34-49.*



Symbol of SW Excellence

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STEWART-WARNER CORPORATION
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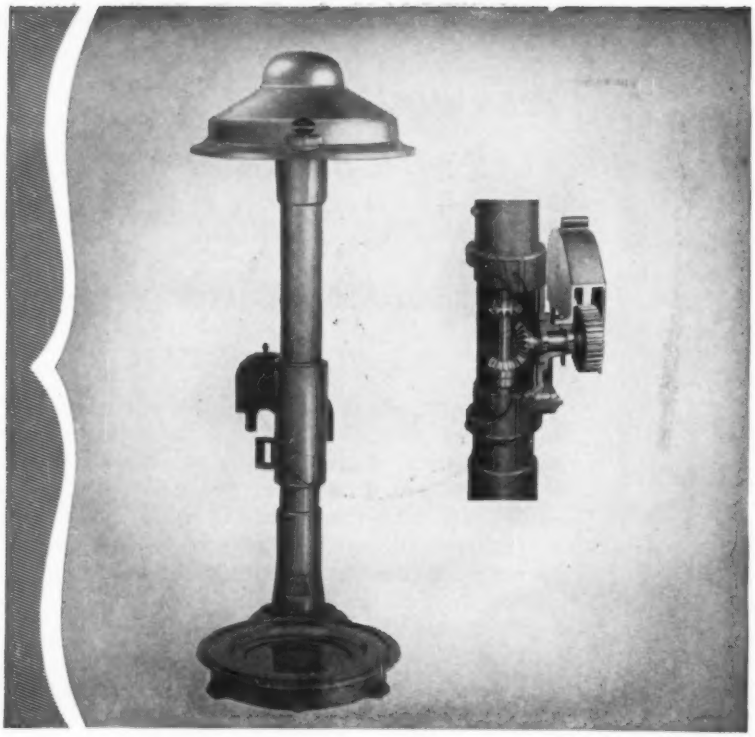
In Canada: Stewart-Warner Corporation of Canada, Ltd.
Belleville, Ontario



SOUTHERN STATES' NEW COILER LINE HAS ALL ENGINEERING AND DESIGN FEATURES WANTED BY MILL MEN

To provide mills with a premium-quality coiler, every engineering and design feature wanted by mill men has been included on the new Southern States Coilers.

A new center adapter (see cutaway view above) permits the stand, head, and base to swivel as a unit within the adapter collar. The coiler may thus be offset for can diameters up to 20 inches and still maintain a straight gear drive take-off for coilers of all makes.

Southern States Coilers are designed for direct attachment to any make of card, left or right hand. Installation is rapid and economical. Other outstanding features of the Southern States Coiler include: ball bearing throughout—head, shaft, cantable ... cut tooth gears throughout ... tubular steel stand ... precision-ground calender rolls ... self-aligning pillow blocks on upright and calender roll shafts ... fully adjustable can table ... quickly detached coil spring roll-loading device ... and many others fully described in our Technical Bulletin 205, available from your Southern States representative or by mail direct from us.

SOUTHERN STATES
EQUIPMENT CORP.
HAMPTON, GEORGIA

SHORTS & REMNANTS

(from page 8)

from our August, 1960, issue; Mr. Kobelt promptly wrote back asking for a dozen more.

Teapot Tempest

From the National Institute of Rug Cleaning we learn, belatedly, that the Peter Gunn show, nationally televised on the ABC-TV network, portrayed on its February 13 show that a murder or murders had been committed by the use of carbon tetrachloride fumes coming from a newly cleaned rug. Seems the murderer was a former rug cleaner. Well, NIRC has informed us that a clarification of this has been asked from ABC and the P. Lorillard Co., sponsor of the show, claiming "irreparable injury to the rug cleaning industry."

Prior Claim

"Would you refer to your article on 'Experimental Instrument Speeds Measurement of Wool Fibers' in the April number of your journal, page 82. You will note from attached . . . that I anticipated this method many years ago."

P. LAROSE
Fibre Research Laboratory
National Research Council
Ottawa, Ontario

Dr. Larose enclosed a reprint from a 1951 issue of the *Journal of the Textile Institute*, in which he described a method for aligning fibers in an electric field before measuring their diameters under a microscope. He had originally presented the idea at a meeting of the International Wool Textile Organization in 1947. As an aside, it might be mentioned that W. Lawrence Balls described this peculiarity of fibers, by which they orient themselves in an electric field, about 35 years ago in his book, "Studies of Quality in Cotton," and speculated that it might be used in the spinning processes.

► Overheard in a mill waiting room: "Hi Joe, how's your wife?" "Compared to what?"

More on Wash and Stare

"Lunching at my desk in an upholstery fabrics weaving mill, I read with interest your 'Wash and Stare' quote from the *Wall Street Journal* [TI for April, p. 10].

"As an owner of a coin operated laundry I'd like to put the 'kibosh' on the suggestion of installing a TV for the convenience of the customers. A TV set, even installed at the ceil-

For further information use Handy Return Card, Page 187

ONLY ONE TO TWENTY...

ONLY ONE PART OF IMMUNOL

REG. U.S. PAT. OFF.

to 20 parts of water makes an outstanding solution that Cleans and Rustproofs Textile Equipment.

This solution is:

• NON-FLAMMABLE • NON-TOXIC
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It replaces ALL solvents

Write today for a free sample

HARRY MILLER CORP. HAMICO 4th & BRISTOL STREETS PHILADELPHIA 40, PA.

Manufacturers of:
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Original Products and Processes Since 1936
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Service Representatives in Principal Cities

(from page 10)

ing level, will not remain there long.

"There isn't anything safe in such an establishment, as I and many another owner know. The vending machines are in jeopardy, as well as the coin changer, benches, trash cans, ash trays, and even the laundry equipment itself.

"Destruction in these unattended establishments is so great it is virtually impossible to secure vandalism insurance, and adding a TV set is only an additional temptation.

"No, this is one suggestion we will not accept with any degree of enthusiasm. Ask the proprietors of those establishments where they installed the sets when they built their stores and you'll see how few sets are still there.

FAE FORMAN

Havertown, Pa.

And More on Indians' Pay

"On page 8 of TI for March you had an item about whether or not Indian textile workers are poorly paid. Some years ago I was weaving master at a Bombay mill with 60,000 spindles and 1,200 looms. We had about 3,000 workers on one 10-hour shift. I doubt that things have changed much since then.

"Compared to U.S.A. mills, the workers are very poorly paid. But in comparison with the U.S.A. their work loads are very small indeed. There are three principal reasons for this:

"1. With a population of so many hundreds of millions, the problem is not one of 'how many looms or spindles to a weaver or spinner,' but 'how many operatives can be employed.' Automation is not viewed very favorably.

"2. The climate. The monsoon season is from June 15 to October 15, during which about 120" of rain will fall in the western parts of India, which includes Bombay and Ahmedabad. During the other eight months of the year, hardly a drop will fall. This results in migration of workers between the up-country villages and these two very large textile centers, which between them probably employ over 300,000 textile workers.

"Primarily these textile employees are agricultural workers of the U. S. A. sharecropper variety in their own 'mulucs' or villages; they migrate to the textile centers when the land is out of season for growing. Their accommodation there is a shared room where they can leave the tin trunk which contains their possessions, while they sleep on the sidewalk wrapped in a 'chaddar' (white sheet). Beds are seldom used even in their homes. So sleeping in the street is no hardship to them.

"The Indian textile worker's life is simple and his pay is very poor indeed compared to U.S.A. wages, but he can live on his meager wages and even save something to take back to his family in his native village, which may be hundreds of miles away.

"3. India is still governed by the religious caste system, which controls the type of work to be done by an individual. The system is even more rigorous and complex than the British trades unions' lines of demarcation in job disputes between unions.

"Most looms in Indian mills are nonautomatic; a weaver's job load is usually two looms, or at most four. There are 40 looms to a fixer (jobber), with one head jobber and one spare jobber to each six jobbers. The caste system will not allow any of these jobbers to trim a shuttle, a picking stick, or any other woodwork on a loom. That is a job for the 'lakri wallah' (carpenter), so there is one carpenter for about six jobbers.

"Since most of the workers are illiterate, many 'babus' (clerks) are employed to write out style tickets, etc., and to translate instructions.

"In size mixing, mutton tallow is often used. The orthodox Hindu, being a vegetarian, will not touch it, so an Indian of the Muslim faith must be employed for the job.

"The cost of labor employed in spinning and weaving *is* very high in India, in relation to output; wages paid are very low, but this is offset by the small work load of the Indian textile worker, and by the local customs and conditions which the mills must observe."

T. HARGREAVES

Manchester, England

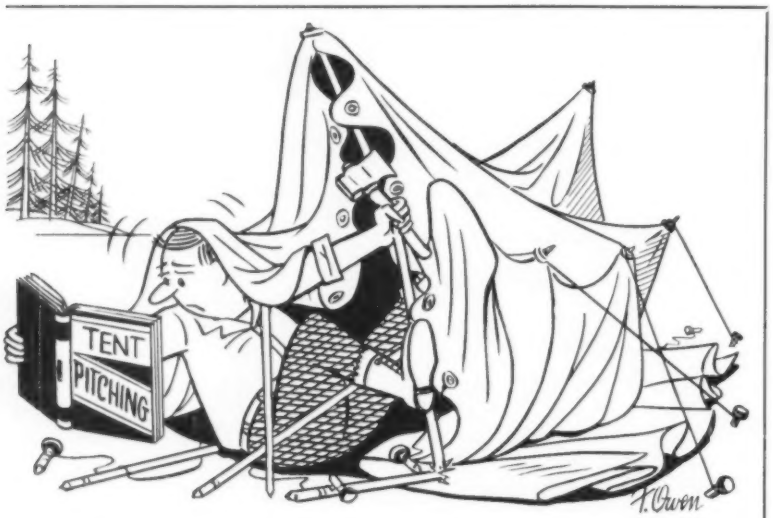
Motor Burnouts

"Referring to the article 'Too Many Motor Burnouts,' by Leo Kowal, in your April issue: Where can the protectors be purchased for use on Parks-Cramer traveling cleaner motors?"

H. C. NORMAN

Master Mechanic
West Boylston Mfg. Co.
Montgomery, Ala.

J. H. Warlick, supt., Falls Mfg. Co., Granite Falls, N. C., was among others requesting information on this. Get in touch with Mr. Kowal at Metals & Controls, Inc., Division of Texas Instruments, Inc., Attleboro, Mass.



THERE'S A RIGHT WAY TO HANDLE H_2O_2, TOO!

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

Becco Chemical Division

It takes experience to determine the best way to handle H_2O_2. Becco's got it. Why not take advantage of Becco's fourfold engineering service, offering survey, proposal, installation and inspection. No obligation, of course.

161 East 42nd Street, New York City

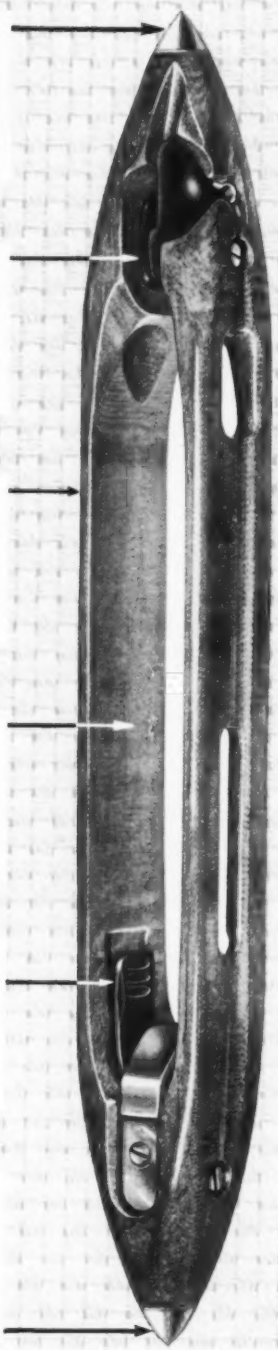
SAVE 50% ON SHUTTLE COSTS

With

Southern

DURAMOLD

Shuttles



Inserted Tips, with today's miracle adhesives—virtually foolproof—with fiber washers to absorb shock.

Eyes, full range for any filling, fit better than wood, will stay tight longer.

Body is the toughest, strongest fabric-reinforced plastics available.

Chamber is the exact size and design *you* want.

Grips have better fit in the harder material, truer and longer-lasting quill alignment.

Tip offset—Southern duplicates *your* location exactly.

You can be certain of getting unusually large savings on your shuttle costs when you invest in Southern DURAMOLD Shuttles. There is no other shuttle anywhere near this remarkable shuttle for quality and stamina.

Once you put Southern DURAMOLD Shuttles in your looms you haven't a care in the world as far as long, dependable, trouble-free shuttle performance is concerned. The reasons are shown at the left.

The record shows that Southern DURAMOLD Shuttles average *four times* the life of other shuttles, and reports of *six* or *seven times* the ordinary shuttle life are not uncommon.

Invest in Southern DURAMOLD Shuttles *right now* and start getting *your* bonus savings . . . plus better quality fabrics. Ask one of our qualified Sales Engineers to show how *you* can save money by using these outstanding quality shuttles.

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STEEL HEDDLE MFG. CO.
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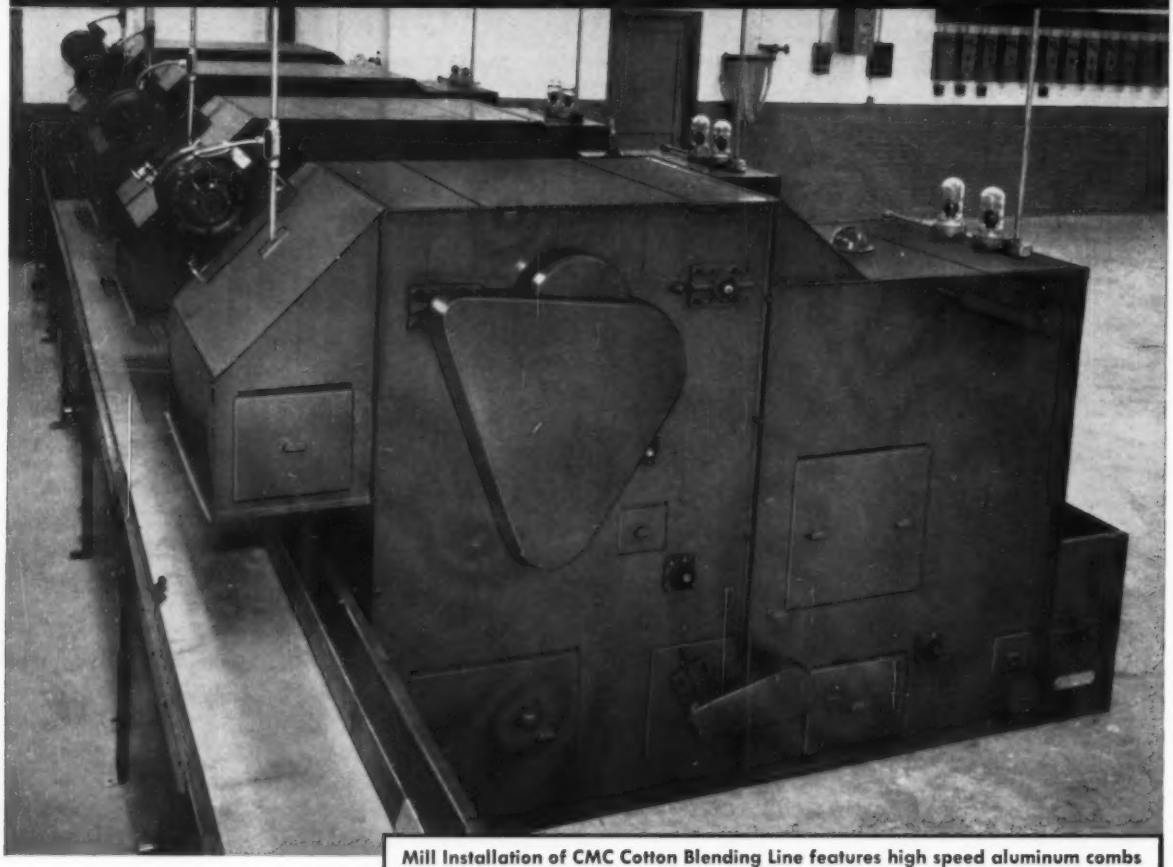
Other Plants and Offices: Granby, Quebec, Canada—Lawrence, Mass.—Greensboro, N. C.—Atlanta, Ga.—Textile Supply Co., Dallas, Texas—Albert R. Breen, Chicago, Ill.

S-5920

FIBER PROCESSING MACHINES
For the Textile industry



Mill Installation of CMC Cotton Blending Line features high speed aluminum combs producing stock in fine tufts, which permits ultimate in opening and blending.

OTHER CMC TEXTILE EQUIPMENT

Granular Top Cards
SRRL Openers, Cleaners
Absorbent Cotton Processing Machines
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Ceiling Condensers
Cotton Cleaners and Openers
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Cotton Condensers
Blending Feeders
Card Feeders
Lickerins
Nonwoven Fabric Machines
Synthetic Staple Openers
Picker Lags
Waste Machines

WRITE for detailed information. Inquiries invited.

CMC CAROLINA MACHINERY COMPANY

SUBSIDIARY OF CURLATOR CORPORATION, EAST ROCHESTER, N. Y.

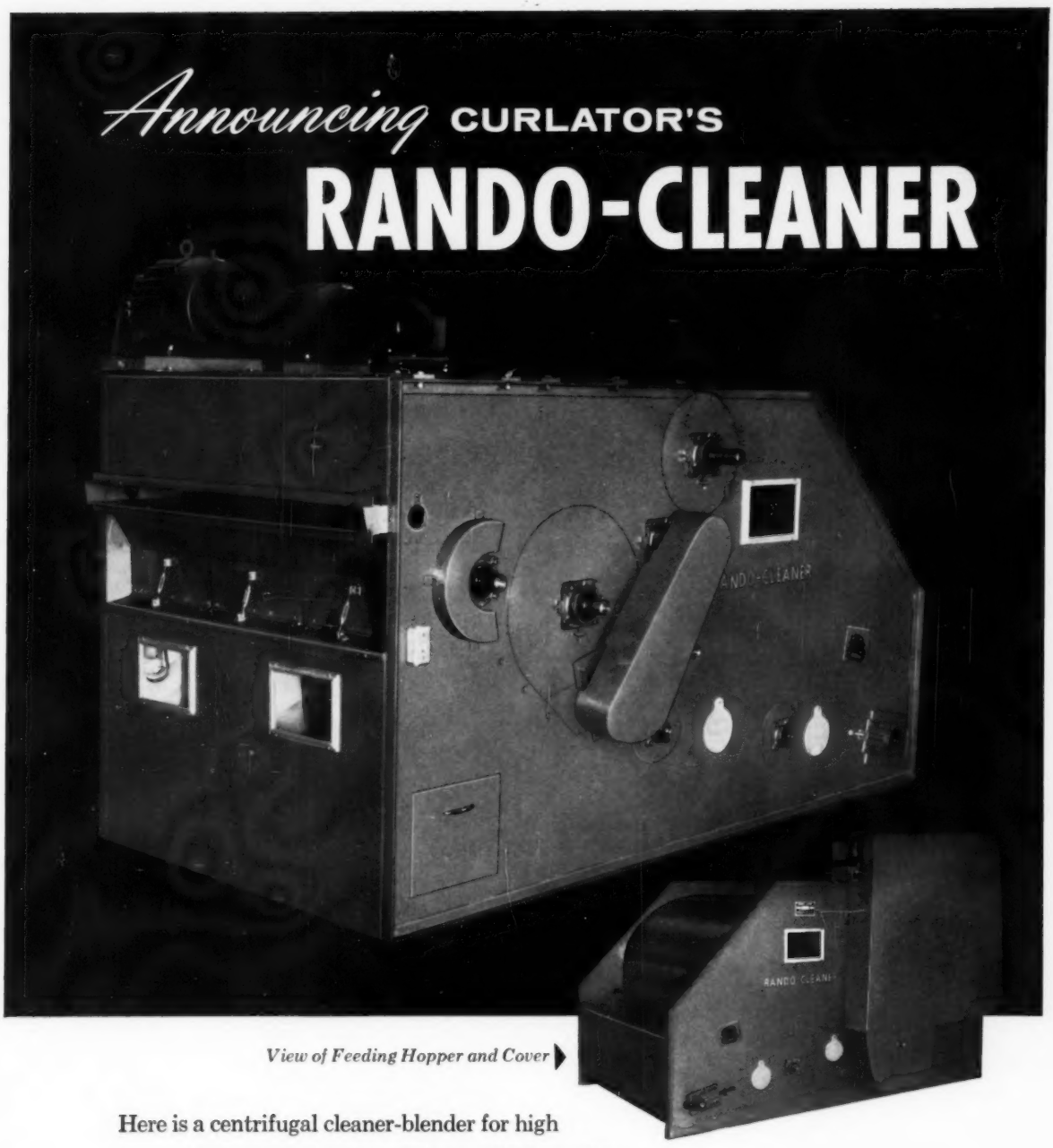
Mfrs. of Opening, Cleaning, Blending and Other Fibre Preparatory Equipment

5019 WILKINSON BLVD. • CHARLOTTE 1, N. C.

For further information use Handy Return Card, Page 187

Announcing CURLATOR'S

RANDO-CLEANER



View of Feeding Hopper and Cover

Here is a centrifugal cleaner-blender for high trash content cotton. The use of this machine results in an approximate 35% increase in opening line cleaning efficiency without adversely affecting the fibers or yarns.

WRITE for detailed information. Inquiries welcomed.

TEXTILE DIVISION
CURLATOR®
CORPORATION
EAST ROCHESTER, NEW YORK

CURLATOR...World's Leading Manufacturer of Fiber Web Processing Machinery

A Member of
American Textile Machinery Association

SOUTHERN STATES:
Carolina Machinery Company,
Subsidiary, P. O. Box 1922, Charlotte 1, N. C.

Schlafhorst

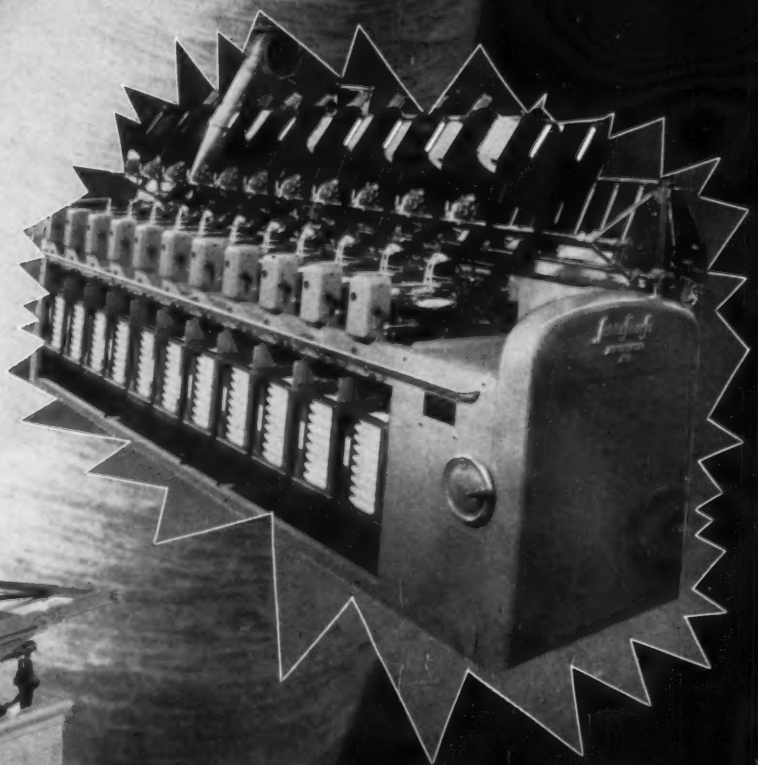
SERVOLOOM AUTOCOPSER

offers new approach to mill automation with individual spindle

DRAPER AUTOMATIC FILLING MAGAZINE LOADING DEVICE

5 MAJOR ADVANTAGES:

1. *Highest* **WEAVE ROOM EFFICIENCY** *through precision-built tip bunch*
2. *Best ratings in* **CLOTH QUALITY** *through fewer and perfect transfers*
3. *Lowest over-all* **COST PER POUND** *in winding plus weaving*
4. *Fast* **RETURN** *on the* **INVESTMENT**
5. *Full* **FLEXIBILITY** *per loom and spindle*



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Sold and Serviced by THE TERRELL MACHINE CO., INC.

CHARLOTTE, N. C., U. S. A.

NEWS IN BRIEF

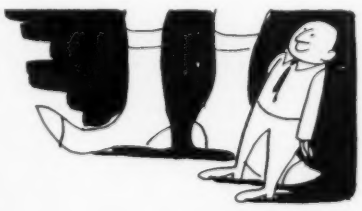
Beating the Textile Cycle. The converter is responsible for much of the fluctuation in textile inventories, and inventory changes are in turn in back of the boom-and-bust textile cycle. This is a con-

clusion reached in a report, "Inventories in the Textile Cycle," prepared by William Miernyk and Manuel Zymelman of Northeastern University as one in a series of studies recommended by the Pastore Committee. One way to dampen the cycle, according to the report: Collection and rapid transmittal of inventory data on all types of fabrics to textile decision makers.

Sees Red Cotton. Look for a Communist economic offensive to narrow the world market for U. S. cotton, warns Eliot Janeway, president of Janeway Research Corp. Japan is currently considering buying cotton from Red China, he says, and substantial purchases there would necessarily result in cutting U. S. cotton exports. " . . . as the changing balance of power in the Pacific moves Japan towards neutralism, she means to play both sides of the street economically," according to Mr. Janeway.

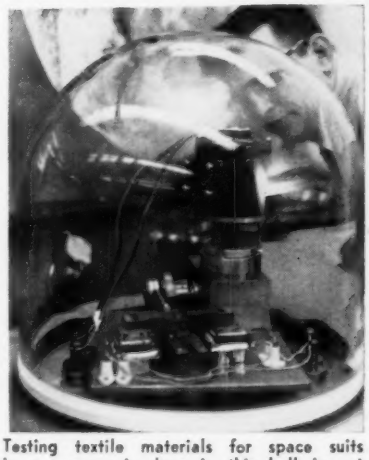
Plan for Modernizing. These are the benchmarks for a sound plan of textile machinery purchases, according to Walter M. Kelly, president of Commercial Factors Corp.: 1. The new equipment must be geared to produce "the right product"—specific types and styles of products that cater to current trends in consumer demand. 2. The decision to expand must be based on a thorough knowledge of "the right markets." 3. Production planning must insure that goods reach the market "at the right time." Realistic goals of a well planned expansion and modernization program should include improved quality control in addition to the more widely accepted objectives of reduced overhead and production costs, he also noted.

More Socks. Better merchandising techniques will increase the market for socks and anklets by $300 million within the next decade, A. C. Layton Newsom, executive secretary of the Durene Association of America, told mem-



bers of the National Association of Hosiery Manufacturers at their recent annual meeting. [For more of Mr. Newsom's comments, see TI's staff report of the NAHM meeting, beginning on page 156.]

Throwsters Organize. The Pennsylvania Throwsters Association has been organized by representatives of 17 silk throwing mills, mostly in Lackawanna County.



Testing textile materials for space suits in a vacuum is done in this bell jar at B. F. Goodrich Co.'s Research Center.

Name Statistics Panel. American Cotton Manufacturers Institute's Economic Policy Committee has named a Technical Consultant Group to oversee the collection, analysis, and distribution of textile mill statistics. Seven specialists in the field make up the group.

Fewer Man-Mades Ahead? "There has been a slow-down in the introduction of new man-made fibers and there is an opinion among authorities in the field that this slow-down will continue into the foreseeable future," Dr. C. Eugene Coke of Hartford Fibres Co., told a meeting of Canadian

ER

DRAWING FRAME

for cotton and staple fibres up to 3 1/8" (80 mm)

A fine set of high speed drawing frames in an important spinning mill

— Do you also want to modernize or extend your Drawing with the most modern frame in production ?

— This installation has been setting production and efficiency records for a year. Many new mill installations such as this one are going up in various countries : United States, Great Britain, Germany, Italy, Spain, India, Argentina, France, etc.

— The outstanding two-head SACM Drawing Frame attracted abundant interest and favorable comments at recent Textile Machinery Exhibitions, and is hailed as a forerunner of modern textile machinery design, unequalled for
  — Human Efficiency
  — Frame Efficiency
  — Sliver Quality

— Why not look into it now ! You will be surprised by the low investment per pound of effective hourly production, by the low operating cost and huge savings in floor space.

— Ask about the patented no-lap drafting system, perfect evenness of sliver produced, high precision and accessibility, easy settings, positive-drive creel. Arrange to see a demonstration.

The ER is manufactured by the

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In the U. S. A. and Canada, Sales and Service of SACM machinery for cotton and short-staple synthetics are exclusively provided by MEDLEY MANUFACTURING COMPANY, Columbus, Georgia.

For further information use Handy Return Card, Page 187

textile chemists recently. Effort by fiber producers is now principally directed to improvement of existing man-made fibers.

Narrow-Fabrics Standard. Narrow Fabrics Institute has issued its first standards pamphlet: "Woven Nonelastic Narrow Fabrics: Classification—Nomenclature—Definitions." It contains a classified and alphabetical list of narrow fabrics by end-use applications, and recommended standard definitions.

These fishing lures are all made with saran (l-r): Shadart with green saran, Baldy Jig and Popeye Jig with yellow saran, No. 1 Gold Spoon and No. 1½ Silver Spoon with yellow saran, and Jackspot Jig with red and white saran.

Japan Boycott Halted. At the implied request of President Kennedy, Amalgamated Clothing Workers of America has called off its planned boycott of Japanese textiles used in the production of men's clothing.

Textile Failures Up. There were 28 business failures in the textile mill products group for the first quarter of this year, and the failed firms had liabilities of $5.5 million, according to a report from Dun & Bradstreet, Inc. Figures for the similar period of 1960 were 25 failures and $2.7 million in liabilities.

Equipment Replacement Analysis. Essential factors in any systematic analysis of equipment replacement are discussed and the MAPI system is explained step-by-step in a 100-frame color filmstrip newly released by Machinery & Allied Products Institute. The film is designed as an instructional aid for all those involved in investment decisions. The film may be

Garnishee—A Growing Management Problem

■ THE PROSPECT of four times as many garnishments in 1961 as there were four years ago is feared by a number of companies. From the management cost aspect alone, the burden is significant—for every $100 employee indebtedness, management spends $20 to process the collection (according to a recent Long Island Rail Road survey).

Many managements feel that the real dilemma of garnishments lies in finding ways to help the employee who is not a *"deadbeat,"* but who suffers from a low sales resistance and tends to be susceptible to so-called bargains. One preventive measure is to inaugurate an educational program via company publications or plant meetings to create employee awareness of the problem and wariness for shoddy selling practices. Among the sales gimmicks about which the unsophisticated buyer might be warned are:

The Balloon Note—a time payment plan involving a series of small payments followed by a large final payment. The unsuspecting purchaser may not have been warned of the last *"balloon"* payment, and frequently is unable to meet it.

The "Add-On"—before the final installment on an item has been paid, the purchaser is urged to buy something else to *"add-on"* to the contract. Everything previously purchased, even long-since-paid-for items, can be reclaimed by the seller in the event of failure to pay for the latter purchases.

The Blank Contract—usually stresses a low down payment and leaves the monthly installment figures blank. The purchaser may be forced to pay installments twice as high as he thought.

Deficiency Judgments—involve the repossession of an item because the buyer cannot complete payment. The original seller can re-sell the item as a secondhand article to a dummy company for a fraction of real value and then obtain judgment against the original purchaser for the difference in price.

In addition to employee education programs, a number of other suggested plans of action to alleviate the management burden caused by the growing employee debt load are evidenced:

- Organize security practices to prohibit vendors from entering or operating on plant property; discourage sidewalk merchants.
- Establish definite company policy regarding garnishment. The potential problem arising from unsound action is illustrated by the fact that disciplinary action accompanying a garnishee has at times resulted in arbitration.
- Inform employees of management's position in regard to garnishment. The most effective deterrent to keep the individual worker from acquiring wage assignments against him is the danger of loss of his job. Recent studies indicate that a majority of companies dismiss the employee who has become a three-time debtor.
- Make known that the services of the company attorney are available when warranted.
- Evaluate the company's position regarding garnishee demands not supported by court action. Many companies feel that merchants whose strategy stresses ease of payment should take some of the risk for over-selling. Management frequently fails to see why a company should bail out the loan shark who encourages the gullible.
- Consider in-plant banking plans that encourage employee thrift and facilitate employee financial responsibility.

He's using a tougher yarn . . . why aren't you?

It takes a tough yarn to keep a fire hose operating at peak efficiency—and tough is the word for Caprolan® nylon by Allied Chemical.

But Caprolan nylon heavy yarns are more than just tough. They are remarkably versatile yarns possessing a number of outstanding performance characteristics. Their excellent dyeability, for example, has made these yarns ideally suited to areas where superior color performance is required—seat belts to complement today's high-styled automobile and airplane interiors, carpeting, home furnishings fabrics and industrial color coding to to name a few.

Caprolan nylon yarns are also included in U. S. Navy specifications for marine rope and are performing superbly in dozens of other end-uses where toughness, strength and flexibility are essential. If you have a tough job—we have the tough yarn for it. Our technical staffs are always ready to help you.

Allied Chemical Fiber Marketing Dept., 261 Madison Ave., New York 16, N. Y.

caprolan
NYLON FOR THE 60's

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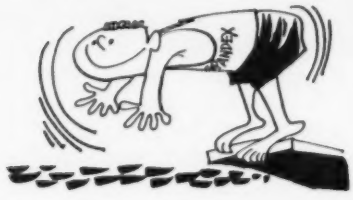
purchased from MAPI, at 1200—18th St., N.W., Washington 6, D. C.; price, $15 for members and $20 for nonmembers.

Tufteds Up. Total shipments of tufted textile products came to $271 million in the last half of 1960, compared to $252 million in the first half of the year, and $233 million in the corresponding half of 1959.

Spandex in the Swim. There's a bright future ahead in the swimwear field for spandex elastomeric fibers. (Two spandex fibers are commercially available at present—Du Pont's Lycra and U. S. Rubber's Vyrene.) So says Paul Haberfeld, president of Rose Marie Reid, West Coast swimwear pro-



ducer, whose firm is using 80% of current spandex production allocated to swimwear, in suits weighing less than 7 ounces—zipper and built-in bra included. A curious feature of the suit is that it is so transparent that a newspaper can be read through it while it's on the rack, but it's reportedly safely opaque when worn.

Effects of UV. A study of the ultraviolet light on polyethylene, Teflon, nylon, Mylar, and Acrilan, made for the U.S. Air Force, has been reported on and is now publicly available. The 160-page report costs $3.00, and can be obtained from Office of Technical Services, U.S. Department of Commerce, Washington 25, D. C. Ask for PB 171,417.

Spinning-Ginning Study. The effect of ginning treatments on cotton fiber properties and spinning performance will be studied at N. C. State College under a $38,000 contract with the U.S. Department of Agriculture.

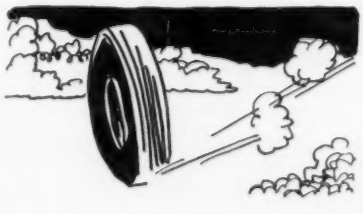
Seamless Passes F-F. For the first time, annual sales of women's seamless nylon hosiery have out-

Miss Wool of America for 1961 is Gayle Hudgens of Hobbs, N. M. She's a scholarship student at the University of New Mexico.

stripped sales of full-fashioned hosiery. Final figures for 1960, just released by the National Association of Hosiery Manufacturers, show that 33.5 million dozen pairs of seamless were sold, compared with 28.6 million dozen pairs of full-fashioned. The comparison is made more striking by looking at the figures for ten years ago: 50.7 million for full-fashioned and 4.2 million for seamless.

More Permanent Wool Creases. There are now more than 80 manufacturers and contractors producing permanently creased wool suits and slacks, the Wool Bureau reports. Six months ago there were only 3 such firms using the process. By fall, such garments will be available in some 6,000 stores, at prices from $10 up.

Tire Cord Trend. Almost 50% of all passenger tire replacement sales were nylon cord tires last



year, according to the Du Pont Co., quoting industry figures. The 1959 figure was 38%. Du Pont further reports a nylon tire cord production of 139 million pounds last year, up 15 million pounds from 1959. Rayon cord during the same period dropped from 297 million pounds to 240 million.

Continued on page 155

Labor-Management News

Union Wins. Textile Workers Union of America defeated United Mine Workers District 50 by a vote of 83-27 in an election conducted by National Labor Relations Board at the Lachman Division of Mohasco Industries, Phoenixville, Pa.

Union Loses. United Mine Workers District 50 was rejected by employees of USF Arnold Finishing Co., Hartsville, S. C., in a third election during a four-month period. This time 90 voted for UMW, while 118 preferred no union.

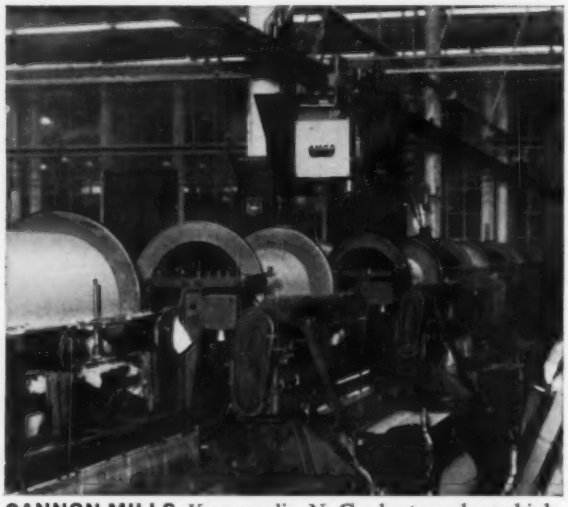
That Union Jazz. In case you think that the union story might sound better set to music, *Textile Labor* recently published a list of

textile workers' songs on records. Sample ballads and bathos: "We Are Building a Strong Union" (two versions available), "Weave Room Blues" (four versions), and "Cotton Mill Colic" (three versions). Not included: "The Roving Kind," as sung by The Weavers.

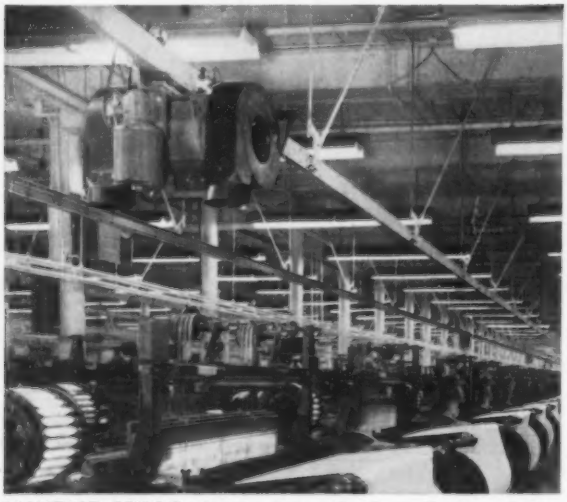
Held Unfairly Fired. A member of Textile Workers Union of America has been restored to his job with full seniority, and with $3,500 back pay, at American Thread Co., Clover, S. C., as a result of an arbitration award. The arbitrator decided that he had been unfairly dismissed.

4 leading textile mills keep work areas clean automatically with Amco equipment

ALICE MANUFACTURING makes fine broadcloth in its Foster plant. Ceilings, walls, beams, pipes in card rooms are kept free from fly and lint with Amco Ceiling Cleaners. Result: fewer production interruptions for manual cleaning . . . and better quality.



CANNON MILLS, Kannapolis, N. C. plant produces high-quality terry cloth on looms equipped with Unifil loom winders. This fabric maker uses Amco Heliclone® Loom Cleaners for automatic, continuous cleaning. Result: greatly improved weave room cleanliness.



MAYFAIR MILLS, Spartanburg, S. C., relies on Amco Heliclone Loom Cleaners in print cloth weave rooms. Amco Cleaners drastically reduce manual cleaning costs . . . step up production . . . improve fabric quality by preventing waste accumulation.

PALMETTO WORSTED, Laurens, S. C. uses both Amco Heliclone Cleaners and Amco Ceiling Cleaners in its worsted spinning operation. Amco equipment prevents waste, lint and fly accumulations . . . boosts production and helps maintain quality.

Learn how Amco automatic cleaning equipment can help *your* mill. See your nearest Amco representative.

AMCO

SINCE 1888

Air Conditioning Equipment — Textile Specialties

American Moistening Company, Cleveland, North Carolina Branches: Atlanta, Georgia, Providence, Rhode Island, Toronto, Ontario.

For further information use Handy Return Card, Page 187

RECENT TECHNICAL AND COMMERCIAL DEVELOPMENTS

by J. B. Goldberg
Consultant to the Textile and Allied Industries

Exclusive

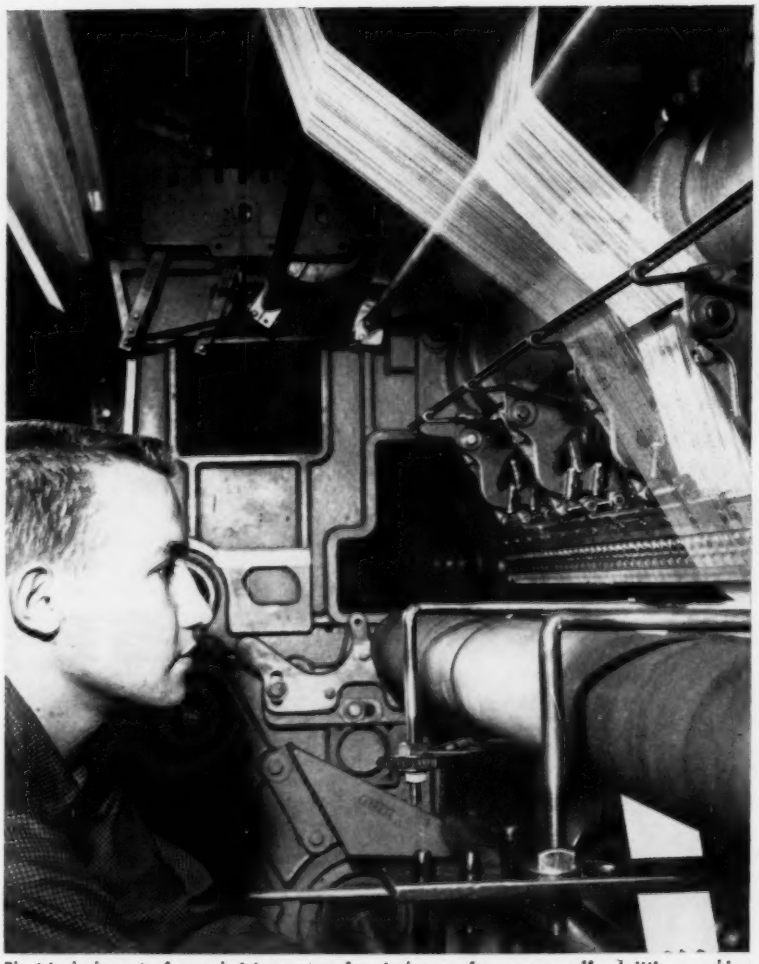
FIBERS AND YARNS

Spun-Dyed Nylon. British Nylon Spinners are now offering a range of eight colors of spun-dyed nylon filament yarns. Included are shades of gray, black, beige, blue, and red, available in various deniers.

New Polyester Types. Vycron polyester fiber is now available as Type 1, described as a high-strength fiber said to be particularly adaptable for sheer constructions; and Type 2, designed to be readily compatible with cotton for use in broadcloths and similar fabrics.

Composite Yarn for Bulked Fabrics. A recent U. S. patent covers a composite yarn made of at least two different types, one of which has the property of being spontaneously and irreversibly extensible relative to the other strand in the same yarn.

Novel Filament Yarns. A British patent assigned to the Du Pont Co. disclosed means of combining cellulosic filaments at a point near the spinneret with synthetic polymer filaments to yield a yarn that is said to be suitable for washable and comfortable apparel fabrics.



Electrical element of new de-icing system for airplane surfaces comes off a knitting machine at Carolina Narrow Fabric Co., Winston-Salem, N.C. Fabric has 48 wires per inch; each is 0.015" in diameter, and wires are spaced 0.006" apart. It will later be impregnated with rubber or plastic to form the de-icer. Fabric was developed by Goodyear Tire & Rubber Co.

FABRICS AND PRODUCTS

Product for Bonded Fabrics. Rayonier, Inc., has developed a modified cellulose which is said to have properties making it useful as a bonding material for non-woven fabrics. "Ethylose" is described as a highly purified wood cellulose which has been modified by grafting with a small amount of ethylene oxide to alter its behavior characteristics. The product is said to be stable in small pellet form as well as in solution. Another suggested application is in wash-wear finishes.

Eliminating Dacron Pilling and Leakage in Pillows. A Chicago manufacturer of pillows and comforters has introduced a process which he claims permanently prevents pilling, creeping, leaking, shifting, shedding, or lumping of Dacron polyester fibers used in such products. The technique involves the spraying of a resin on the Dacron fibers on both sides of the batting, then baking it. The treated batting can be used with batistes or other light fabrics containing Dacron fiberfill without danger of fiber leakage.

Fur-Effect Fabrics. A Philadelphia manufacturer has patented woven cut pile fur-effect fabrics and a method for making them. The pile yarns are comprised of a core yarn and a second yarn used

Brings cushioned, soft starts to textile machinery!

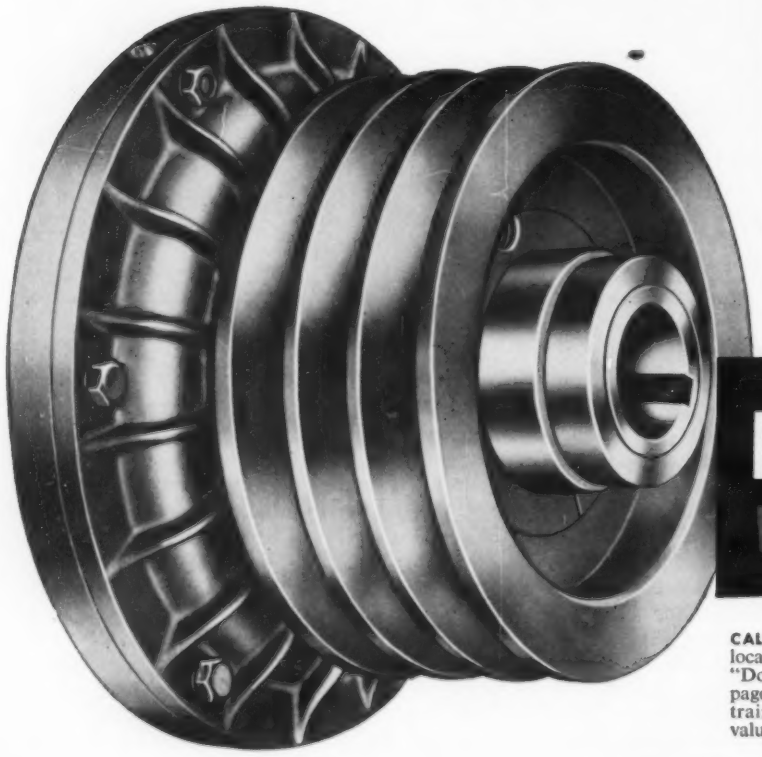
Flexidyne picks up the load smoothly—saves down time from broken ends, keeps yarn uniform. It accelerates quickly to full speed and then operates at 100% efficiency. It saves on motors, controls and power — reduces maintenance — protects motors against shock and overload. Torque can be changed by varying the dry flow charge of heat treated steel shot that is employed to start loads *with fluid ease*. This revolutionary drive is being used with great success in:

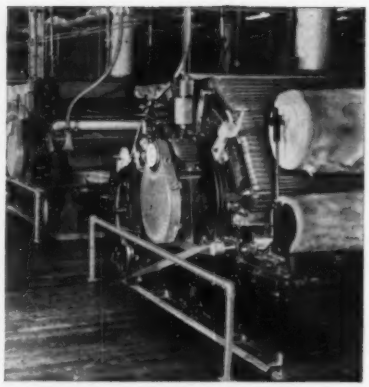
• openers • extractors • condensers • beaters • pickers • cotton, wool and synthetic cards • warpers • twisters • roving frames • fly frames • slubbers • tenter frames • slashers • cloth rolling heads • cloth shearing machines

Flexidyne is available from stock in 8 drive sizes and 10 coupling sizes for capacities from fractional to 1000 hp. Ask your Dodge Distributor, or write us for complete technical bulletin.

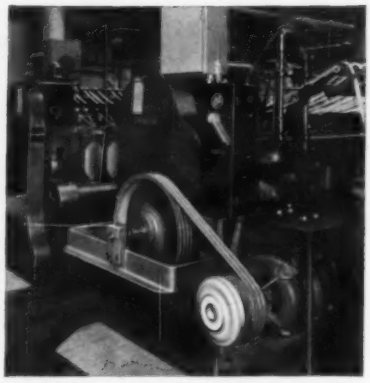
Dodge Manufacturing Corporation, 3500 Union Street, Mishawaka, Ind.

The Products with the Pluses... **DODGE**
of Mishawaka, Ind.

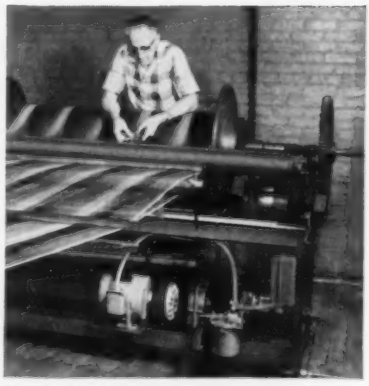




INDIVIDUAL CARD DRIVES



ROVING FRAMES



LONG RAIL BEAM WARPERS

FLEXIDYNE
THE DRY FLUID DRIVE

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Look under "Dodge Transmissioneer" in the *white* pages of your telephone book. Factory trained by Dodge, he can give you valuable assistance.

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as a wrapper. The pile is sheared to a substantially level surface, then passed over a heated grooved roller running at high speed to remove substantially all twist and kink from the yarns, producing a uniform level of beard hair-simulating fibers and a lower level of fuzzy undercoat-simulated fibers.

Coated 3-D Fabric. A U. S. patent has been granted on a woven base of fabric made with high-shrinking yarns in one direction on one side, with a coating of resilient material applied to completely cover the opposite side, then forming puffs by shrinking the yarns.

Cellulose Staple Batting. The Celanese Corp. of America has patented means for producing a cellulose staple fiber batting by first mechanically interlocking organic acid ester of cellulose staple fibers, then saponifying to convert them to cellulose. Finished product is said to be similar to a wool felt.

Wool-Like Cellulosic Textile Materials. The Du Pont Co. has obtained two patents on a method for preparing a cellulose textile material possessing substantially the single fiber liveliness, crease resistance, and bulk characteristics of wool. The technique involves a chemical treatment with selected nitrogenous chemical swelling agents. The original tensile strength of the untreated cellulose textile material is said to be recovered after a temporary reduction in tensile and tear strength of the swollen textile product.

Nonwoven Waxing and Buffing Pad. A rayon nonwoven material has been marketed for use as a waxing and buffing pad in polisher-scrubber machines. The pad is said to resist wear, maintain its shape, and spread the wax very effectively.

Breathable Vinyl Fabric. A Canadian concern is offering a new vinyl coated fabric for upholstering all types of furniture. Among the claims made for this product are "breathability," wear resistance, soil resistance, softness, cool comfort, and easy cleanability.

Nylon Netting for Radiation Protection. The Canadian Defense Research Board claims a major breakthrough in the realm of nuclear protection with their development of a chemically treated nylon net fabric. The "blast victim" is said to be enveloped in a protective smoke while wearing a veil of such material to protect the neck and face. Tests indicate protection of up to 30 calories.

Stretch Fabric. New filling stretch fabric for sportswear, developed by a mill and a rubber company's textile division, is 34% nylon, 33% acrylic, and 33% rayon. "Contour Cloth" is available both plain and laminated to foam. Properties claimed include 25-30% stretch with full recovery, wrinkle resistance, and machine washability.

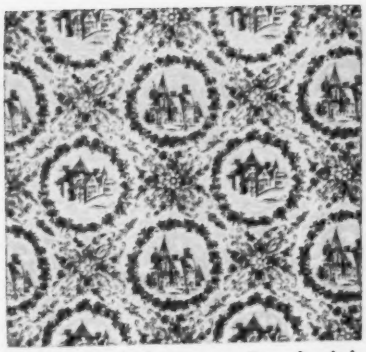
Shrouds for Meats. Bemis Bro. Bag Co. has obtained sole rights for the manufacture and distribution of Ramitex shrouds for beef, purchasing the ramie cloth from the Orient. Also acquired by Bemis are rights for making porosity-controlled plastic-coated cotton wrappers for veal and lamb.

Tire Uses Nylon and Rayon. A new tire has been developed using a combination of two plies of rayon and two plies of nylon. The nylon provides the extra strength, while the rayon contributes better riding comfort and reduced vibration. Patent has been applied for this construction.

Performance-Rated Carpets. In a test marketing, all carpets sold by A. & M. Karagheusian, Inc., in the Buffalo, N. Y., area, now bear a "Performance Rating" or "PR" designation: Light Use, Medium Use, Heavy Use, or Extra Heavy Use, as determined by laboratory and wear tests. Ratings apply to wear and appearance retention.

TEST METHODS

Yarn Cop Sorter. Sorter for cops of wool yarn, developed by Wool Industries Research Association (England), automatically segregates the cops into six weight groups, at the same time rejecting those out of tolerance. Speed of up to 1,800 cops per hour is reported.



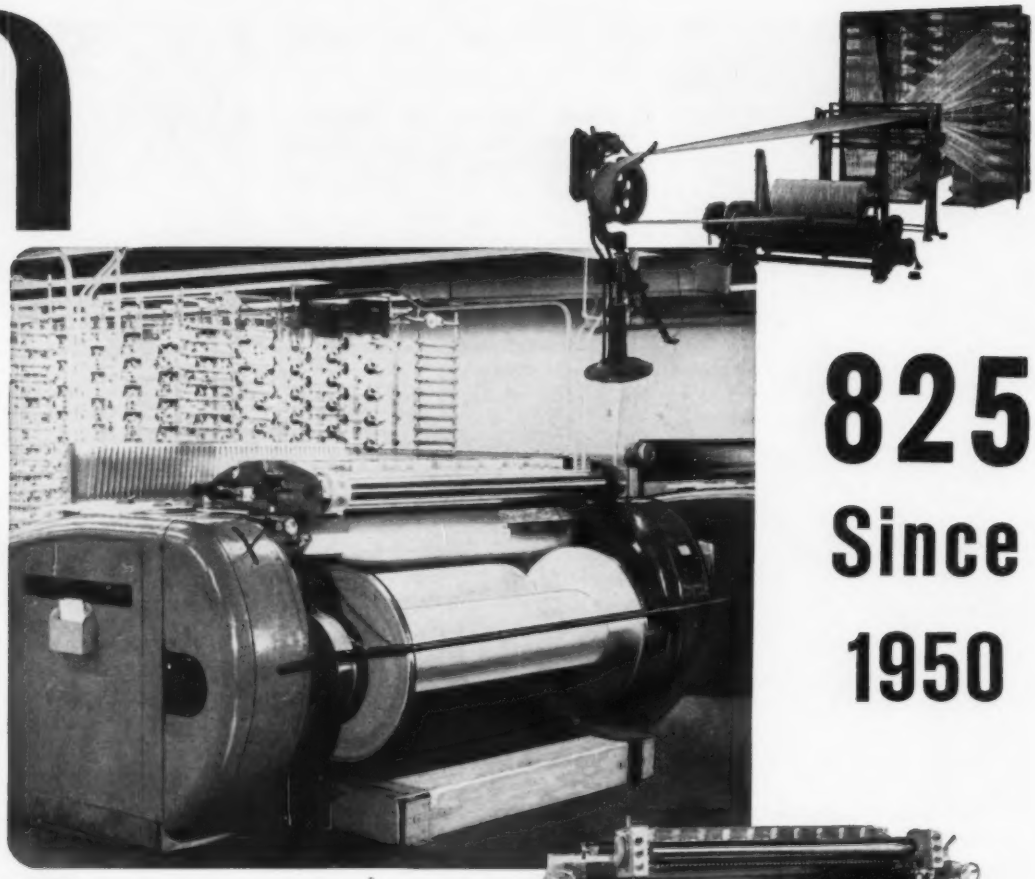
This is a sample from a new line of upholstered furniture fabrics in a variety of French, Italian Provincial, and Early American patterns marketed by Fulton Cotton Mills.

Tire Cord Adhesion. Two new methods for evaluating adhesion between textile and rubber parts of tires, belts, hose, etc., were described by rubber company scientists at recent meeting of American Chemical Society. The first measures stress required to pull U-shaped cord from rubber bar; the second, a dynamic test, measures separation rate between plies of rubber fabric laminates subjected to peeling force at elevated temperatures.

Parachute Tester. High-speed impact machine capable of rupturing parachute materials of up to 10,000 pounds static breaking strength at velocities from 200 to 750 fps has been developed by Fabric Research Laboratories for the U.S. Air Force. Force is applied by free-flying missile, weighing up to 10 pounds.

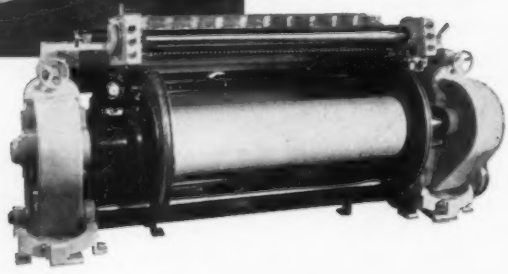
MACHINERY AND PROCESSES

Yarn Length Regulator. New device for measuring and controlling the amount of carpet yarn wound on twister spindles can be set for any yardage in 50-yard increments up to 2,100 yards, and automatically stops the spindles when the desired amount has been wound. One control per spindle is required (cost is $11.75 each), and accuracy to within 10 yards is claimed.



Cocker

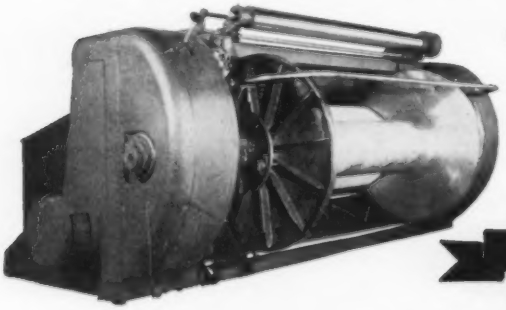
825 Since 1950



. . . has installed over 825 warpers since 1950—approximately three times the volume of the next leading make. Speed, flexibility, economy, and many valuable exclusive features account for this outstanding popularity—from finest deniers to heaviest tire cord yarns.

Accurately maintained air operated pressure produces beams of any desired density, from hardest beams for extra hours of weaving to soft beams for perfect dye penetration. Speed and braking are rheostat controlled from both ends to provide smooth operation and instant stops at all speeds. Horizontal traverse on combs prevent channeling. Other features, such as air doffing, predetermining counter clocks, and electric speed indicators are standard on most models. Heavy construction practically eliminates vibration.

Whatever your warping requirements may be, there is a Cocker Machine which will do the job faster and better. Let us give you full information on the type you need.



THE LEADER COCKER AROUND THE WORLD

Machine and Foundry Co., Gastonia, N. C.

WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE WARP PREPARATORY EQUIPMENT

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EXECUTIVE VIEWS

Prepared by a man who is closely identified with the textile industry.

The bogy of automation

"...equipment which enables one person to command a tremendous amount of output is the only thing that can add measurably to our prosperity..."

AS THE NUMBER of unemployed persons in the United States continues to mount, a great deal is being said about the effect of automation on this unemployment.

A good many labor unions are making the subject of automation a major item in their demands upon employers to protect their members from something which is often a direct consequence of the rapacity of these same unions. Newspaper editors, who often know practically nothing about the subject, have added their words to the general confusion; so millions of persons can be excused for assuming that automation is some new and terrible economic monster recently unleashed to prey upon the working man.

There is certainly nothing new about automation. It has been going on steadily for approximately 200 years.

The textile industry was the mother of automation, and nothing that this industry accomplishes in the future can compare with what it has already done in the past. Since one girl in a modern spinning room can produce about as much yarn as 10,000 girls could have produced with hand-operated spindles 200 years ago, the elimination of this one girl, while a signal tribute to mechanical ingenuity, can hardly compare in importance with previous accomplishments in our industry.

AUTOMATION and labor costs are practically Siamese twins. So long as it is cheaper to do something by hand than by machine, there is no incentive to devise the machine. As soon as a law, or the rapacity of a labor organization, forces an employer to pay more for hand labor than for machine performance, someone will almost certainly develop a machine to take the place of the overpaid worker.

A classic example of this is afforded in our own industry where, 50 years ago, many mill treasurers contended that it was actually cheaper to weave cloth on plain looms than on automatic looms. The New England mills adopted automatic looms rather slowly because their plants were old and their looms had long since been amortized, and so long as they could hire weavers for six or seven dollars a week there was little if anything to be gained by buying automatic looms. There were plenty of skilled weavers in that section of the country, and therefore no incentive to use automatic looms on account of difficulty in hiring good weavers.

If a mill management could assume that it had no sensible investment in its looms, and that the annual maintenance on these plain looms was negligible, the elimination of three or four weavers by installing a stand of automatic looms to replace, say, 32 plain looms, would pay a very meager return on the investment. As soon, however, as wages began to rise, the picture was completely reversed, and with each increase in hourly wages, the possibility of using plain looms became less and less.

Today of course a very large investment in new looms can be justified by a substantial increase in the number of looms one weaver can tend, and the same thing is true all through a textile mill.

THE TEXTILE industry, being so old, has passed through many stages of development that are just now overtaking younger industries which were built up hastily to supply a sudden demand for a novel and popular product. Many of these industries are now overbuilt, just as the textile industry became overbuilt at one time; and the keenness of competition, together with the insatiable de-

USED IN TEXTILE MILLS AROUND THE WORLD

BARBER COLMAN

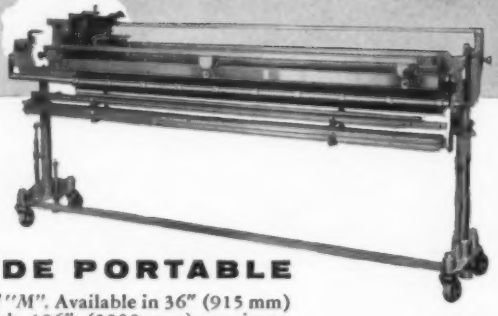
WARP TYING MACHINES

FOR

COTTON • WOOL • LINEN • WORSTED

MOHAIR • SILK • SYNTHETICS

SUITABLE MODELS FOR ALL CONDITIONS



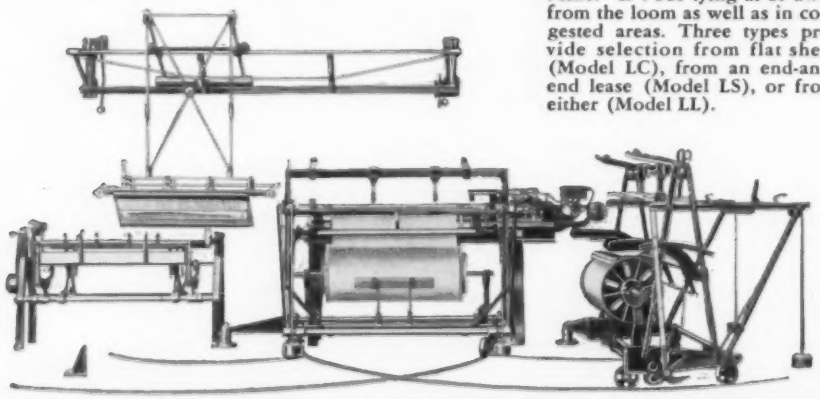
WIDE PORTABLE

Model "M". Available in 36" (915 mm) through 126" (3200 mm) maximum warp width capacity. Multiple frames permit advance loading. Three types provide different methods of selection.

ALL MODELS OPERATE UP TO 325 KNOTS PER MINUTE CONTROLLED BY VARIABLE SPEED MOTOR DRIVE

15" (380 MM) PORTABLE

Model "L". For tying at or away from the loom as well as in congested areas. Three types provide selection from flat sheet (Model LC), from an end-and-end lease (Model LS), or from either (Model LL).



STATIONARY

Model "EL". Designed for use in mills that concentrate on simple weaves. Available in 46"(1170 mm) through 116" (2950 mm) maximum warp width capacity. Tying ahead saves substantial down time at the loom. Selects from flat sheet only. For cotton and spun yarns.

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

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mands of labor unions for higher and higher wages, are forcing these industries to turn to automation, just as the textile industry turned many years ago.

Automation is also spreading into non-manufacturing areas. Business machines enable banks and other operations requiring a great deal of clerical help to operate with a small fraction of the employees which would have been needed under the systems in use only a few years ago. The telephone companies probably could not find enough operators to cover their switchboards today if they operated with the equipment available 50 years ago, and if they paid current wages the telephone rates would be so high that a large proportion of their present subscribers would never have installed telephones. Computers, capable of performing in a few seconds work requiring several days of effort by a statistician, are justifying tremendous investments in all sorts of businesses.

This sort of automatic equipment which enables one person to command a tremendous amount of output is the only thing that can add measurably to our prosperity. This is the old, old story of making two blades of grass grow where one grew before; and, if the process is multiplied, a whole field grows where there was nothing but barren expanse originally.

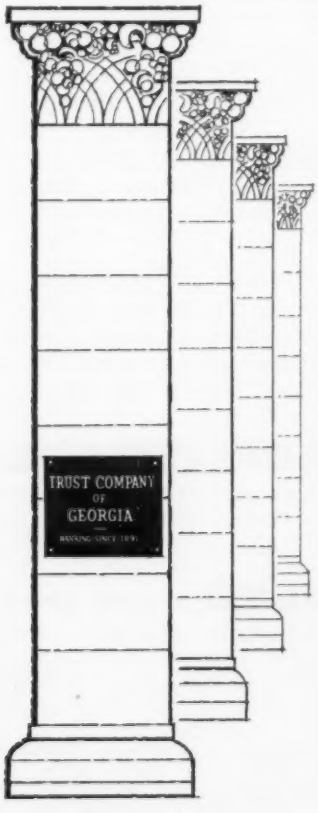
TO OPPOSE automation is ridiculous and is generally the result of ignorance. Yet it has always been opposed by those suffering immediate injury from it, or those who fancied that it must inevitably destroy employment opportunities and put people permanently out of work.

The objections voiced to automation today are rather mild compared to those of more than a century ago when aroused workmen in England and Europe were rioting and destroying textile mills because they were convinced that if one person could do the work of 16, 15 must necessarily be out of work. We have repeatedly seen how false this argument is, and how reducing the cost of desirable commodities has tremendously expanded their product and sale.

"We must either find ways of cutting manufacturing costs or the textile industry must disappear"

Nothing is more likely to cause unemployment and depression than to get an economy out of joint by insisting that large segments of the population shall be paid far more than they are worth for producing something that other segments of the population can not afford to buy. Nothing will promote prosperity any faster than putting on the market more goods at lower prices.

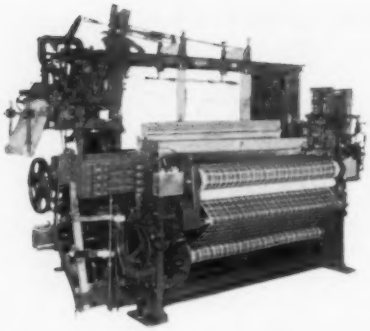
THE TEXTILE industry is pres-



PENSION and PROFIT-SHARING PLANS

TRUST COMPANY OF GEORGIA ATLANTA

. . . the bank serving businesses large and small since 1891

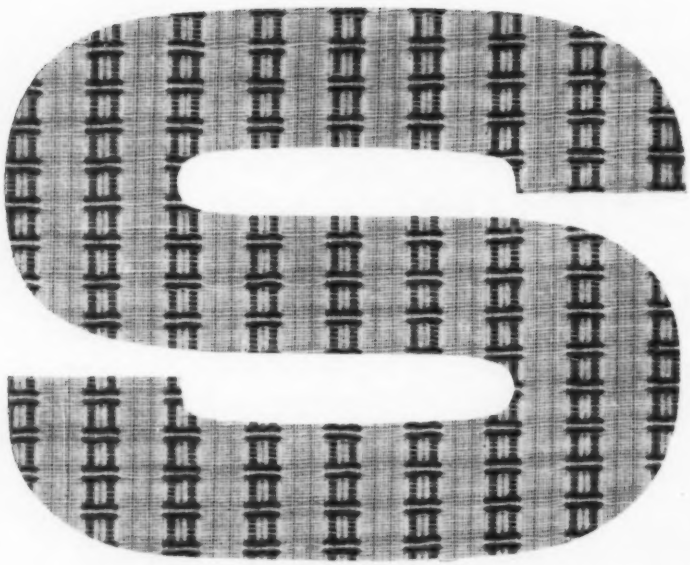


QSEWMT

QUALITY OF CLOTH · SPEED OF LOOM
EFFICIENCY · WEAVER ACCEPTANCE
MAINTENANCE COSTS · TRAINING TIME

SPEED of a loom is more than just picks per minute. Equally important is everything that increases performance and reduces down time due to mechanical failure. More production results from weaving at higher speeds without offsetting loom stoppages.

C & K has built higher speed weaving into the C-7 loom. Double link type binders stabilize shuttle flight, providing easier picking and more accurate checking. The transmitter drive gives a fly wheel effect for steadier operation at high speeds. Exclusive on Crompton & Knowles' new looms, electric protection permits speed without mechanical failure when loom bangs off. Many parts that used to wear, break, or lose adjustment are eliminated.



Push button control permits faster single picks, backups and pick outs. The C-7's electric brain assures faster weaving with increased protection for both loom and operator.

These are but the highlights of the many C-7 features which allow true high speed operation. May we show you some operating comparisons on how to weave more cloth in every hour?

CROMPTON & KNOWLES CORPORATION

WORCESTER, MASSACHUSETTS

C&K

WORLD LEADERSHIP IN AUTOMATIC BOX LOOMS–RESEARCH–ENGINEERING–MANUFACTURE

CHARLOTTE, N. C. / ALLENTOWN, PA. / CROMPTON & KNOWLES JACQUARD & SUPPLY CO. PAWTUCKET, R.I. / CROMPTON & KNOWLES OF CANADA, LTD., MONTREAL, QUEBEC

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ently very much interested in reports of almost completely automated textile mills developed in Japan and in Switzerland. It hardly seems likely that a very considerable investment for automation would be profitable in Japan where wages are so low, and it is likely that the Japanese manufacturers who are developing this automated equipment have their eyes on sales in the United States, where wage scales make further automation very interesting. We have heard of no American installations of these highly automated mills, but several seem to be in the offing and in another year or two some are expected to be in operation.

A good deal of progress in cost-cutting has been made in card rooms in this country during the past decade. Years ago there were a great many 10″ coilers on cards and drawing frames, and 12″ was the maximum diameter for cans. Now mills have changed, or are changing rapidly, to 18″ or 20″ cans, and we have heard of some 24″ cans. Replacing a 10″ can with a 20″ can will reduce the frequency of doffing 75 per cent, and except in a very large mill, there is not going to be much that can be done about cutting out enough card and drawing frame tenders to pay for any very expensive new equipment.

The big savings can be made in the spinning room. Mill operators are talking about *spinning rooms with no spinners* at all, and several devices for automatically doffing spinning frames are now under development, and promised for early marketing. With the automatic doffer, one spinner to piece up ends after doffing could take care of a pretty good-sized room, and on coarse to medium yarns it might be profitable to make no attempt to piece up ends except during the doffing cycle.

The problem in the spinnerless spinning room is to get the number of ends down per thousand spindles reduced to an extremely low point; and, if this can be done, a frame which is doffing frequently might not have enough ends down to justify the cost of putting these up. Whether this spinnerless spinning room would be practical for fine yarns is doubtful, because a frame doffing infrequently would have so many more ends down when the time came to doff.

A very big possibility in cutting costs in the spinning room lies in spinning directly from drawing cans and eliminating the roving process entirely. This has already been done with some satisfaction on coarse yarns, but to make real quality yarn without roving frames demands a drawing sliver of extremely high uniformity. Whether this can be done if cards are fed with distributors instead of laps remains to be proved. It

Continued on page 90

FUTURE EVENTS

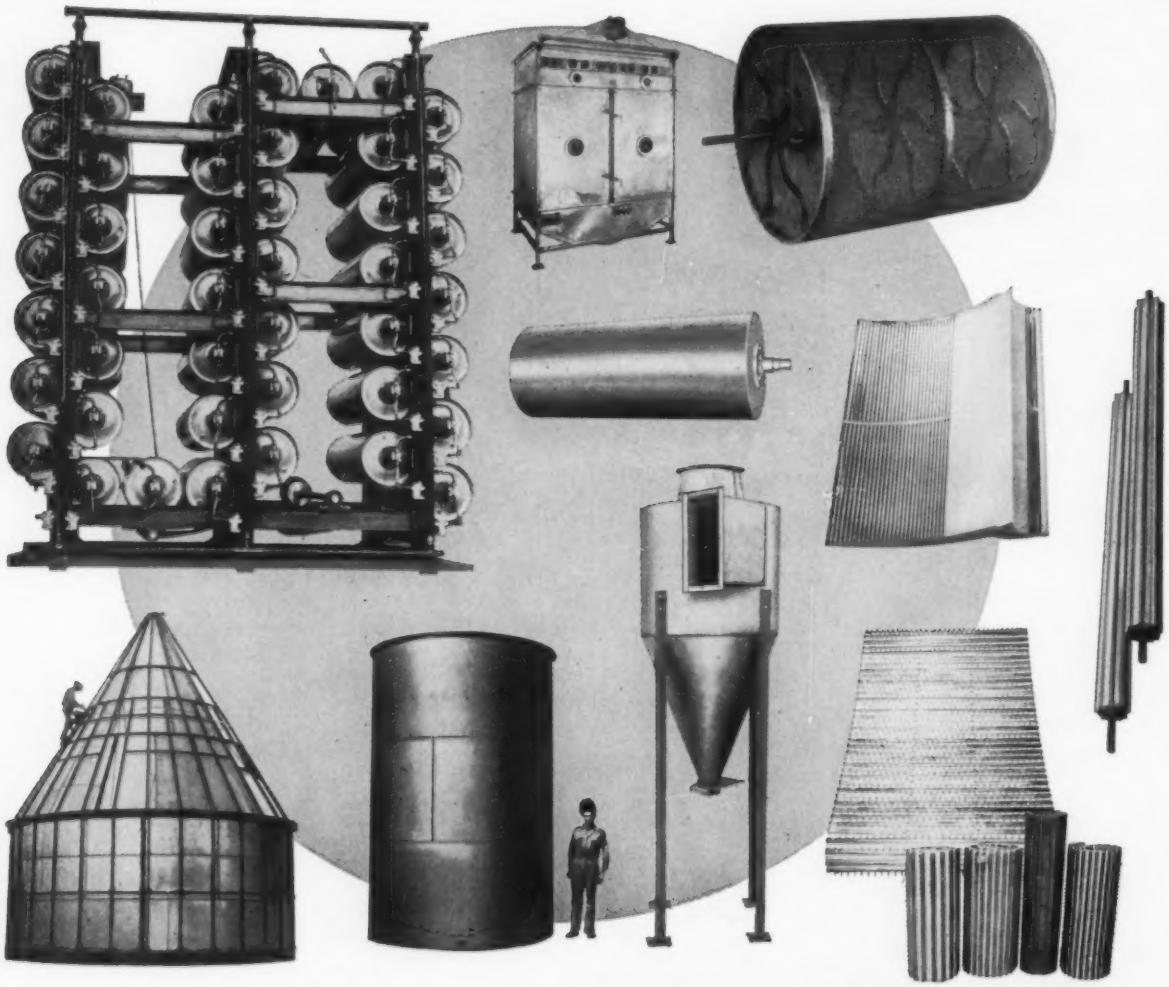
Date	Event	Location
June 8-10	Piedmont Section AATCC and Palmetto Section AATCC outing	Grove Park Inn Asheville, N. C.
9-10	Southeastern Section AATCC outing	Radium Springs Albany, Ga.
16-17	South Central Section AATCC outing	Riverside Hotel Chattanooga, Tenn.
22-24	Southern Textile Association annual convention	Ocean Forest Hotel Myrtle Beach, S. C.
23	Hudson-Mohawk Section AATCC annual outing	Antlers Club Amsterdam, N. Y.
24	Mid-West Section AATCC outing	Cerami's Island View Resort Burlington, Wis.
June 26-July 1	International Textile Fair (fabrics only)	Paris, France
July 10-14	Gordon Research Conference on textiles	Colby Junior College New London, N. H.
Sept. 7-8	Combed Yarn Spinners Association annual meeting	The Greenbrier White Sulphur Springs, W. Va.
12-14	Southeastern Maintenance & Engineering Show	War Memorial Coliseum Greensboro, N. C.
12-14	Southeastern Plant Engineering & Maintenance Seminar	Town Hall Greensboro, N. C.
14-15	Textile Processing Symposium, sponsored by American Gas Association	Clemson House Clemson, S. C.
15	Delaware Valley Section AATCC	Wilmington, Del.
21-22	Carded Yarn Association annual convention	The Cloister Sea Island, Ga.
21-22	Southern Textile Methods & Standards Association	Clemson House Clemson, S. C.
21-22	Chattanooga Yarn Association outing	Read House Chattanooga, Tenn.
27-29	AATCC national convention	Hotel Statler Buffalo, N. Y.
Oct. 7	Alabama Textile Operating Executives carding and spinning discussion—9:30 a.m.	Thach Auditorium Auburn, Ala.
Oct. 11-13	Quartermaster Association national convention	Biltmore Hotel Atlanta, Ga.
11-21	International Knitting Machinery & Accessories Exhibition	Belle Vue Hall Manchester, England
11-13	Fiber Society	West Point, N. Y.
12-14	Symposium on Permanent Finishing, sponsored by Swiss Association of Textile Chemists & Colorists	Zurich, Switzerland
14	Textile Operating Executives of Georgia	Ga. Tech Atlanta, Ga.
14	South Carolina Div. STA	Clemson, S. C.
Nov. 8-9	Chemical Finishing Conference	Sheraton Park Hotel Washington, D. C.
13-15	Narrow Fabrics Institute	Statler Hilton New York City

"Custom tailors" to industry

Since 1926, Sims has been designing and fabricating the specialized equipment called for in the manufacture of textiles.

As "custom tailors" of stainless steel, Sims' recommendations, designs, and fabrications are dictated by your particular problem, need, requirement or application of equipment. And, Sims specialists are on the job from start to finish to assure meticulous attention to even the smallest detail... the craftsmanship that unconditionally guarantees that the finished product will meet and surpass your most exacting specifications.

rolls · vessels · kettles · coils · size boxes · linings · cylinders · machinery · air and material handling systems . . . for textile · chemical · food processing · pulp-paper and other industries



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Friday Textile Machine & Supply Co., Gastonia, N. C.

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WEST POINT, GEORGIA

Specialists in
Stainless Steel Fabrication

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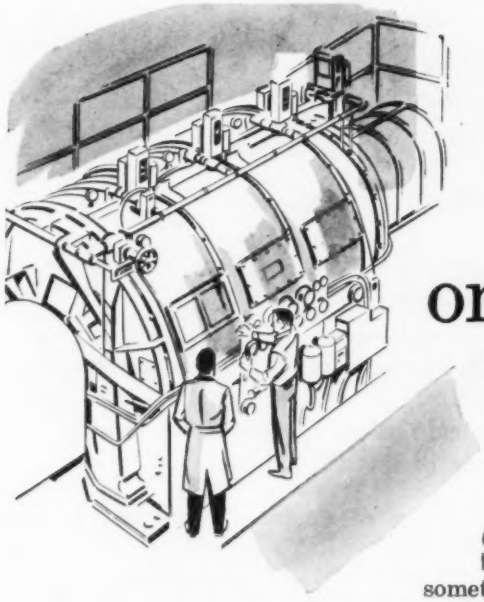

There's more than one kind of Dynamatic service!

Some folks think of "service" as the help you need when something goes wrong. That's important, of course, and Dynamatic supplies it with competent service representatives located in principal cities throughout the United States and Canada. In addition, around-the-clock seven-days-a-week service is available from the factory.

But there's another kind of service that's equally important—the service that starts even before you have purchased Dynamatic speed control equipment. It's being able to sit down with your Dynamatic representative, knowing that he has very likely been up against a problem about the same as yours before; that he has a background gained through years of experience in this specialized field.

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EATON

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Dynamatic produces Eddy-Current Drives, Couplings, Brakes, and Dynamometers. Also Dyna-torQ Magnetic-Friction Clutches, Brakes, Clutch Brakes, and Clutch Couplings.

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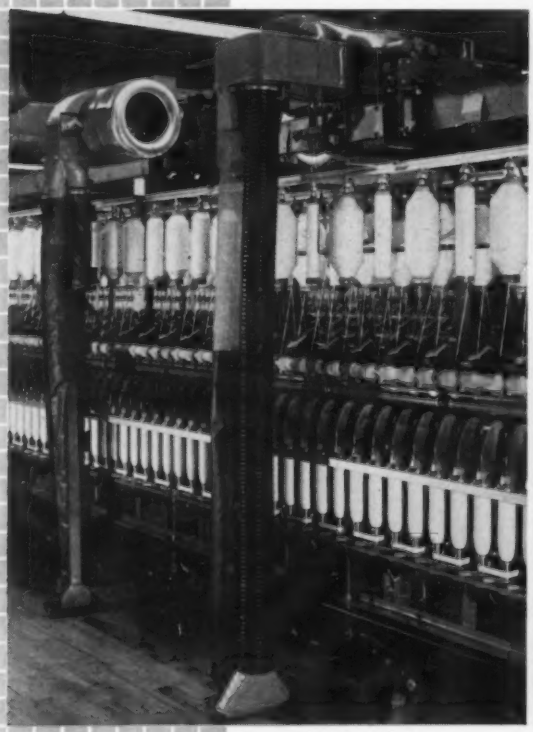
And other textile machinery
***plus* specialized ceiling cleaning.**

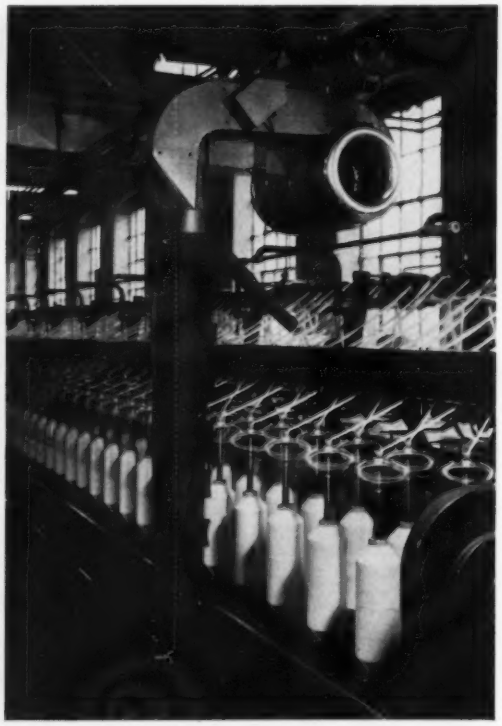
Bahnson TRAVELING CLEANERS

Have *Specialized Features* and *Custom Engineering* to provide maximum cleaning efficiency in specific mill areas

Bahnson's complete line of cleaners fits modern textile processing requirements. Individually designed to do a specialized job in the particular area where it is installed, each Bahnson Cleaner has proven efficiency in use. Each operates automatically to cut manual cleaning and improve production quality resulting in considerably reduced costs. Complete data on each cleaner is available in informative, illustrated bulletins. Write us for details on all Bahnson Cleaners or the individual cleaner of interest to you.

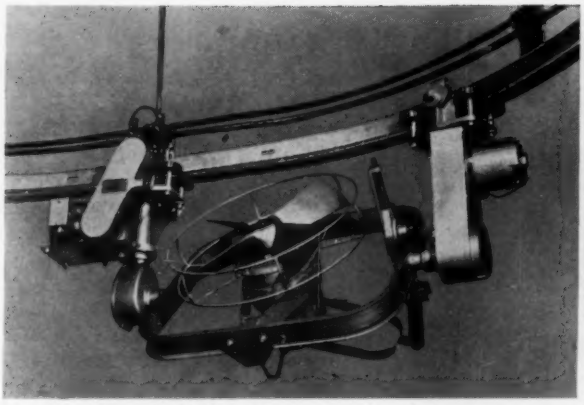


For Cleaner Floors:
Vacu-Pak Traveling Floor Sweeper
Write for Catalog 33-A

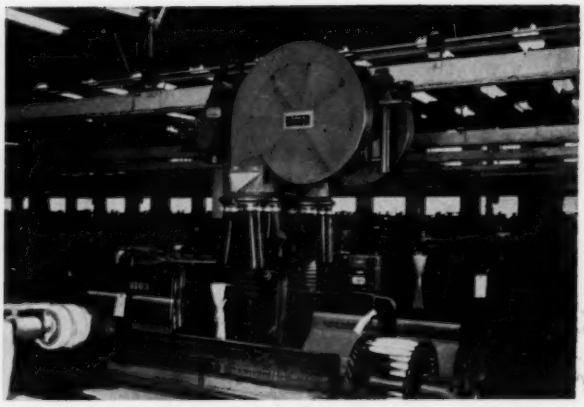


For Roving Frames:
Rov-Aire Traveling Cleaner
Write for Catalog 35-A

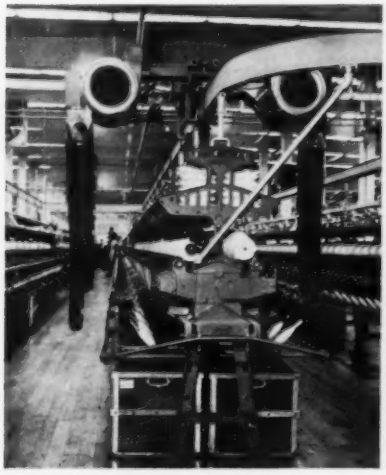
For further information use Handy Return Card, Page 187



For Ceilings, Walls, Overhead Areas:
Aero-Sweep Traveling Cleaner
Write for Catalog 21-A

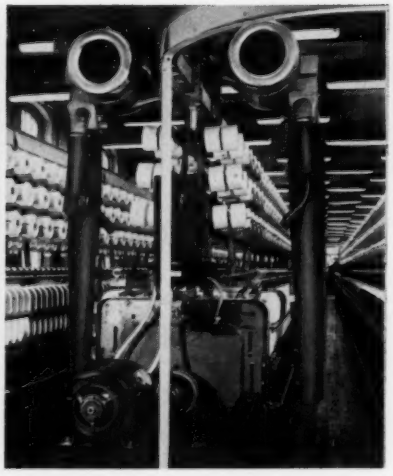


For Looms and Weave Rooms:
Duo-Blast Traveling Cleaner
Write for Catalog 37-A

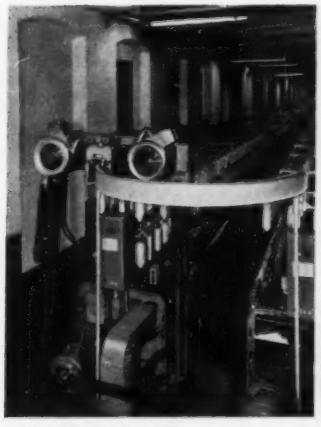


For Leesona Winders:
Cross-Jet Traveling Cleaner
Write for Catalog 32-A

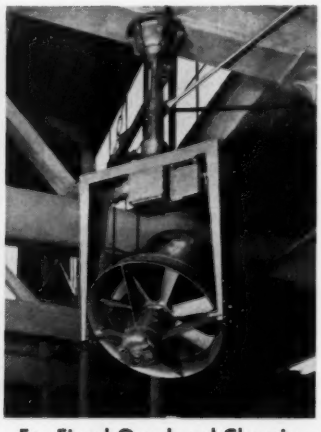
For Foster #102 Winders:
Cross-Jet Traveling Cleaner
and **Vacu-Pak** Floor Sweeper
Write for Catalogs 32-A and 33-A



For Twisting Frames:
Cross-Jet Traveling Cleaner
Write for Catalog 32-A



For Spinning Frames:
Cross-Jet Traveling Cleaner
Write for Catalog 32-A



For Fixed Overhead Cleaning:
Circulaire Overhead Cleaner
Write for Catalog 34-A

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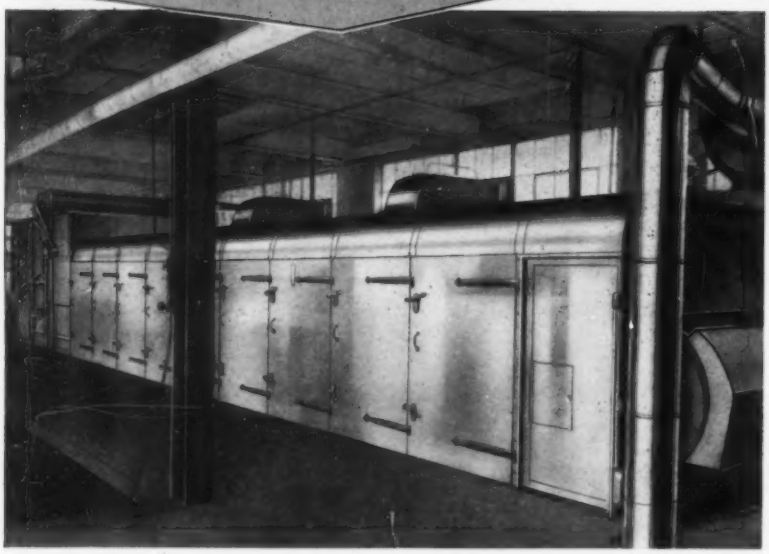
AIR-O-MATION

THE BAHNSON COMPANY

WINSTON-SALEM, N. C., U. S. A.

How to Cut Costs in Fibre Processing



The SARGENT System...

Fully Automatic Handling of Natural and Synthetic Staple from Dye Kettle or Washer to Card.

Delivers uniformly dried, lofty stock at high volume rate. Releases manpower for other work. Better than 1,000 lbs. per hour produced continuously, day in, day out. Installations have cut processing costs better than one-third.
This highly efficient, economical Sargent-designed system has only five units:

1. Rotary type Wet Feeder takes air-blown wet fibres from the dyehouse, feeds them to squeeze roll machine. Has ball-bearing main cylinder with stainless steel teeth, a rotary comb, two heavy rubber aprons — one to feed fibre to main cylinder, the other to deliver fibres to nip of squeeze rolls.
2. Extractor has sectional rubber ring roll, hammered steel bottom roll with fine knurl. Pneumatic loading, two air cylinders, control panel and indicating dial. Working at 80 lbs. pressure estimated air consumption is 4 cfm.
3. Stock Fan and Cyclone Condensor. Stock fan takes fibres from extractor, delivers them to cyclone condensor mounted above hopper of dryer feed, opening fibres and conditioning them for even, smooth delivery to dryer.
4. Rotary Feeder delivers even layer of fluffed fibres to dryer conveyor. Designed to effect a semi-combing action, eliminating matted bunches for more uniform drying, fewer neps at card.
5. Dryer with Blow-Up Section. Air-flow is down through traveling stock, with up-draft at blow-up section, midway of dryer. A highly efficient way to redistribute fibres evenly over stainless steel perforated flight conveyor and to even out moisture content of all fibres. Equipped with air-operated recording type temperature controls complete with steam control valves and air filter. These dryers are designed for easiest cleanout, fastest installation and highest operating economy of any dryer on the market.

Every machine in the system boasts Sargent's rugged construction; with simplicity of design, minimum maintenance, dependable, steady performance. Here is a system to save you money, man-power, time. Let us give you complete details.

C. G. SARGENT'S SONS CORPORATION
Graniteville, SINCE 1852 Massachusetts

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PERSONAL NOTES

Letters of congratulations from the President of the U. S. and other high national and state officials, along with the National Exchange trophy, "The Book of Golden Deeds," were presented to **J. M. Cheatham** recently when he was honored as Griffin Georgia's "Man of the Year." Mr. Cheatham is president of Dundee Mills, Inc., and president of the American Cotton Manufacturers Institute, Inc.

E. T. Martin has been elected secretary of Dan River Mills, Inc., Danville, Va.

Everett C. Reed has been elected president of Albany (N. Y.) Felt Co., succeeding **John C. Standish**, who will continue as chairman of the board of directors. **Z. J. Chagnon** and **J. Spencer Standish** have been named executive vice-presidents. **Albert C. Cramer** has been appointed vice-president, and **Douglas P. Bridge** has become secretary.

At the annual meeting of the Alabama Textile Manufacturers Association, held in Biloxi, Miss., recently, **Sidney W. Tingen,** treasurer of West Boylston Manufacturing Co., was elected president. Mr. Tingen succeeds **Donald Comer, Jr.,** executive vice-president of Avondale Mills, who has become chairman of the board of the association. Other officers elected were: vice-president—**W. E. Dunn,** vice-president of Huntsville Mfg. Co.; treasurer—**Robert B. Horsley,** vice-president and general manager of the Alabama Division of Pepperell Mfg. Co.

At the annual meeting of Alabama Textile Education Foundation, held in Biloxi, Miss., recently, **T. Floyd Holmes,** Opelika Mfg. Co., was elected president. Other officers elected were: vice-president—**R. B. Horsley,** Pepperell Mfg. Co.; treasurer—**J. W. Patterson,** Tallassee Mills.

Louis H. Civin has joined Malibu Textiles Corp. as head of the roller and screen print department.

At the recent meeting of Southern Textile Methods and Standards As-

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Picker Overhauling Is Simple When You Depend On . . .

Aldrich Repair Service

We furnish skilled men for reworking pickers, and can deliver to these men any needed parts within 24 hours in most southern states, and within 48 hours to almost any cotton mill in the United States. This makes thorough overhauling a simple matter. Anything needed for a good job can be had at once, while the machine is down for repairs.

If you do your own overhauling, this speedy delivery service is just as valuable. You don't have to wait for repair parts — they are there when you want them.

We manufacture and install complete blending, opening, and picking systems for cotton and synthetics, and cleaning systems for cotton.

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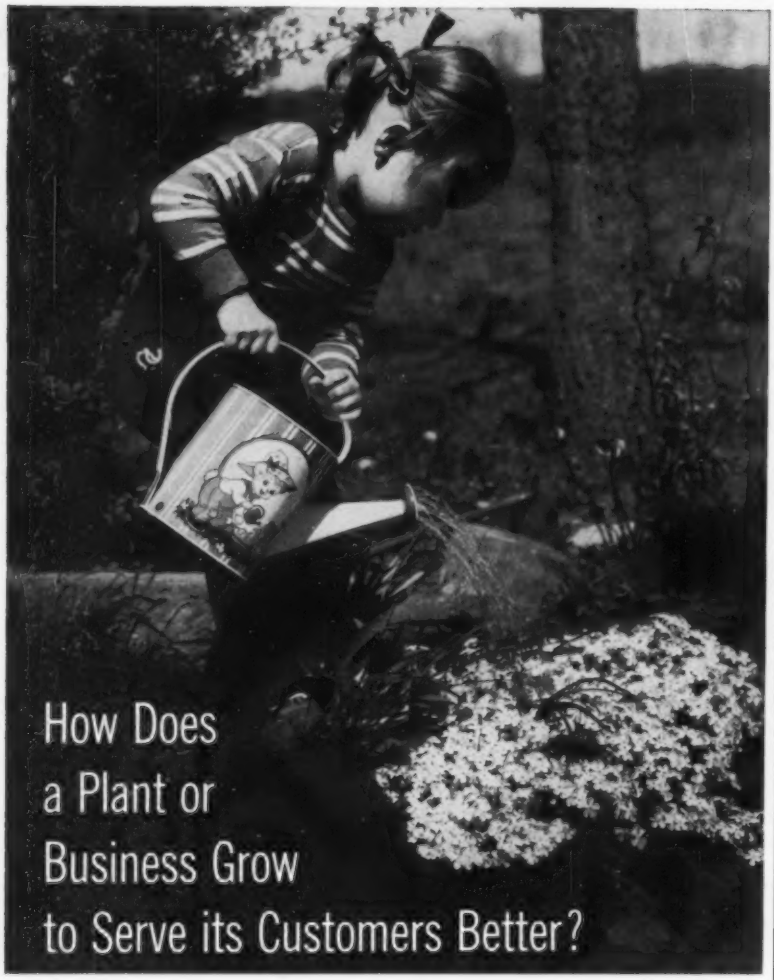
Greenwood, South Carolina



Most businesses are highly competitive. Ours is no exception. Yours probably isn't, either. How then—in face of stiff competition—does a business grow, expand its facilities, products, and services?

There is only one answer, based on our experience, which has led to steady growth and development during the past few years: *dedication.*

Dedication to product quality. Dedication to service. Dedication to meeting customer requirements.

Today TPP serves you from 5 strategically located plants, each capable of producing a complete range of tubes and cores of the finest quality.

If you are looking for a dependable source of tubes or cores, it will pay you to talk with us.

TPP TEXTILE PAPER PRODUCTS inc.

Specialists in tubes and cores for textile and paper industries

CEDARTOWN, GEORGIA Home Office and Plant
Other Plants In: Carlyle, Illinois — Crossett, Arkansas
Jacksonville, Florida — Mobile, Alabama

PERSONAL NOTES

(from page 36)

sociation, **James M. Cooper,** of Firestone Textiles, was elected president. Other officers elected were: vice-president—**W. A. Funderburk** of The Kendall Co.; treasurer—**Foye Boswell** of Bibb Mfg. Co.; executive secretary—**Howard Loveless** of the University of Tenn.

William H. Jackson has been named vice-president and treasurer of Sayles Finishing Plants, Inc., Saylesville, R. I., succeeding **Edgar R. Coddington,** who has resigned.

Abe Lachterman has joined Avis Textile Corp., as general manager of the tricot operation.

At the spring meeting of the Textile Quality Control Association, held in Charlotte, N. C., recently, **Ernest G. Freudenthal,** Werthan Bag Corp., Nashville, Tenn., was elected president. **Robert V. Miraldi,** Washington, D. C., was elected secretary-treasurer. The following were named to four year terms as directors: **Phillip Lipe, Jr.,** Park Yarn Mills; **Gus Guggenheim,** The Kendall Co.; **Horace Buchanan,** Erlanger Mills; **J. K. Waits,** Joanna Cotton Mills Co.; **Eugene Cross, III,** Cross Cotton Mills.

Charles J. Taylor has accepted the position of personnel manager for Hatch Mill Corp., Columbus, N. C.

Frank E. Masland, III, has been named president of C. H. Masland

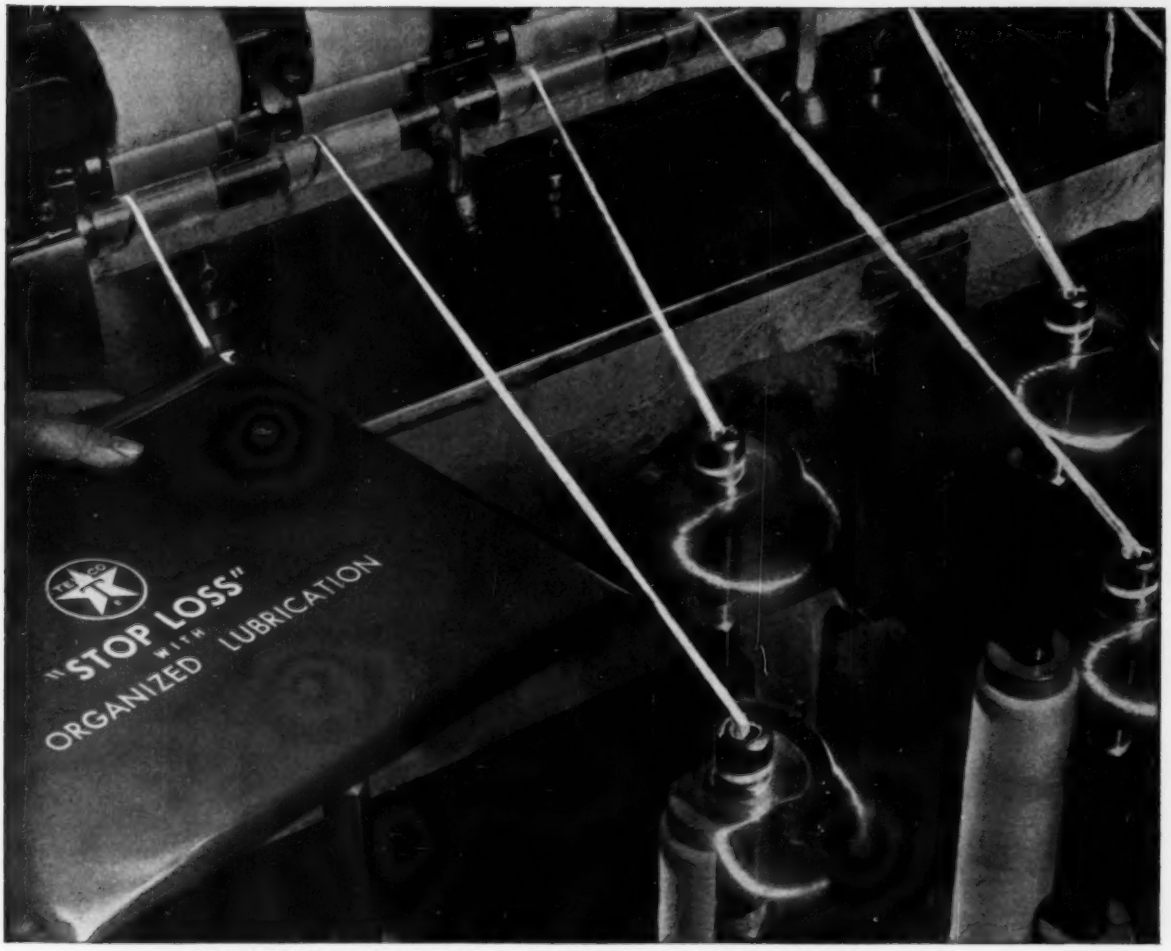
Frank Masland

W. S. Masland

& Sons, Carlisle, Pa. **William S. Masland** has been elected first vice-president.

Charles W. Allen, secretary and general counsel, and a director of Callaway Mills Co., LaGrange, Ga., has resigned his position to accept a position on the business administration faculty at LaGrange College. * * * **Arthur B. Edge, Jr.,** has assumed direct responsibility for all domestic sales and customer service as president of Callaway Sales, Inc., sales subsidiary of the parent firm.

For further information use Handy Return Card, Page 187



TEXACO'S "STOP LOSS" PROGRAM quickly solves lubrication problems that spoil your profit.

Texaco's "Stop Loss" Program can help you stop profits from creeping away

Oil on the roving! Downtime piles up as you find and correct the trouble—and profits creep away.

Texaco's "Stop Loss" Program can help you eliminate losses due to oil soilage and other causes—*add as much as 4% to your net profit.* It's a completely flexible program and it works in large mills and small.

A "Stop Loss" Program begins with a study of your mill's lubrication requirements—from pickers to looms. This is followed-up with recommendations for a lubrication control system fitted to your mill's needs. Then Texaco provides the basic "tools" needed to make "Stop Loss" work for you.

"Stop Loss" can save money in your mill. See how—by sending for more information. And ask to see our new film, "Stop Loss with Organized Lubrication", which dramatically presents new opportunities for savings. Just mail the coupon below today.

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For Micronaire testing . . .

IMPROVED...

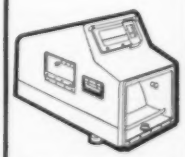
Faster-weighing, easier-reading SHADOGRAPH® Scales

A new optical system, developed by The Exact Weight Scale Company, provides the Shadograph with greater-than-ever visible accuracy. Its shadow-edge indication is sharper, easier to read, and contributes to faster operation.

Model 4104-A, above, is specially designed for weighing samples in conjunction with the Sheffield Micronaire testing machine. Dial is graduated with 1 inch of indicator travel equal to 15 grains, over and under.

Extreme accuracy, plus greater speed and easy-to-read indication make Shadograph the choice of cotton shippers, brokers and mill operators both here and abroad. The Shadograph is another precision product of Exact Weight, leading manufacturer of job-engineered scales for more than 45 years.

Model 103 Exact Weight Scale for control of cone and spool weight.



Model 4142 Shadograph for determining yarn count number. Direct-reading eliminates use of conversion tables.

Shadographs are available for color control, slashing, sliver test, denier test and check-weighing operations.

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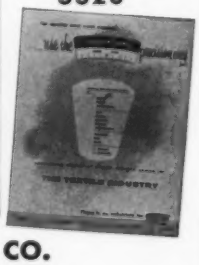

Exact Weight SCALES

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Sales and Service Coast to Coast

Find us in your local 'Yellow Pages'

BETTER QUALITY CONTROL . . . BETTER COST CONTROL

PERSONAL NOTES

(from page 38)

Fuller E. Callaway, Jr., chairman of the board of directors, has succeeded Mr. Edge as president of the parent firm, and **R. D. Williams, Jr.,** former president of the sales organization, will continue as vice-president of the parent firm and has assumed the presidency of Callaway Products and Servaround Leasing Corp. * * * **William Colley** has been promoted to plant engineer at the Hillside plant.

Richard Grills has assumed the responsibilities of production manager of the Westerly, R. I., operation of Bradford Dyeing Association, U. S. A. **Eugene C. Eccleston** has been named service manager of the New York office.

Sydney M. Cone, Jr., vice-president and director of Cone Mills Corp., has been elected a trustee of The Johns Hopkins University. * * * **Russell Thomas Holcombe** has been promoted to supervisor of corduroy cutting at Union Bleachery, Greenville, S. C.

Preston F. Marshall has been appointed director of research for the fiber products division of The Kendall Co. * * * **Robert Booth** has been elected vice-president of the company.

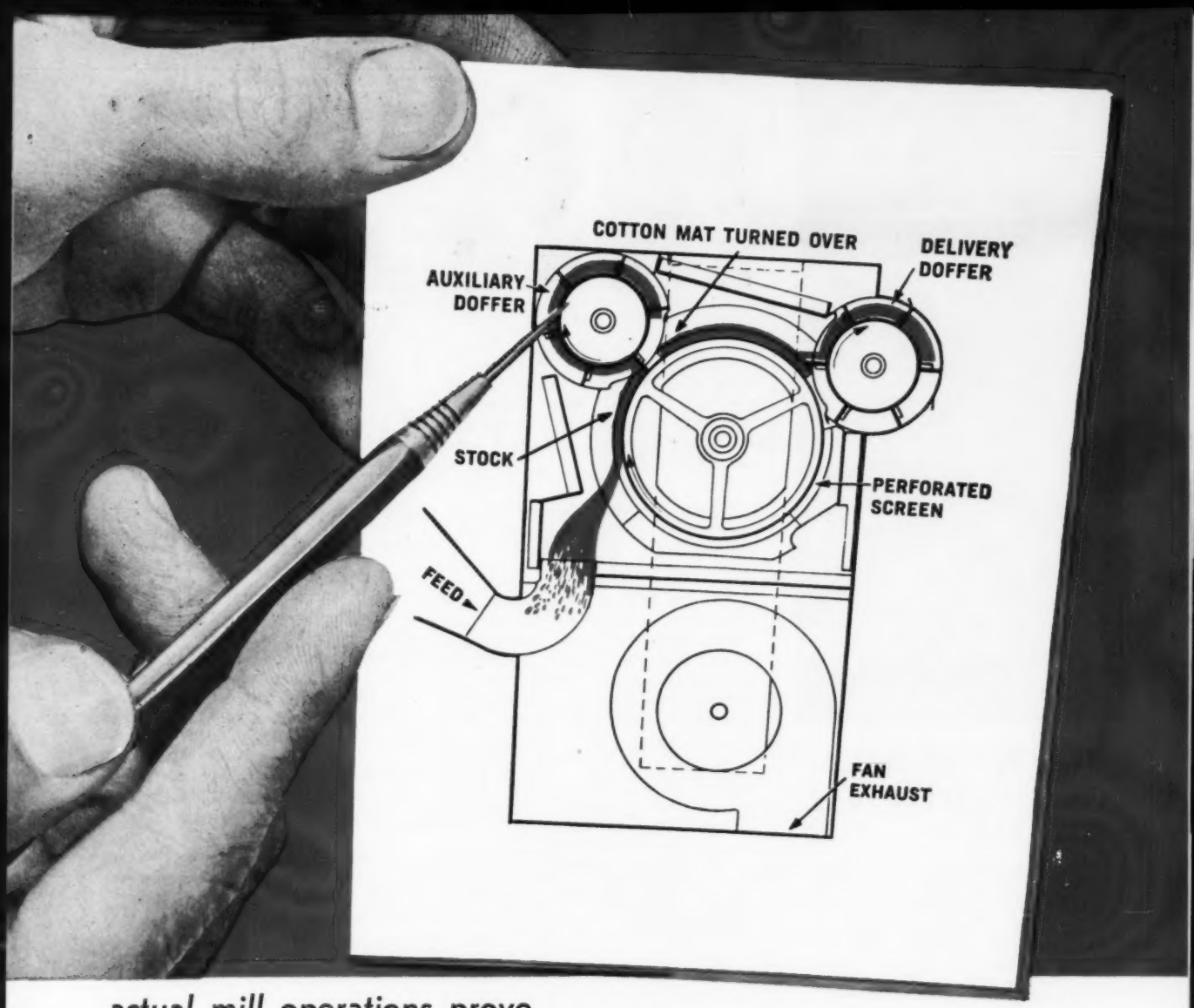
At the annual meeting of the Georgia Textile Manufacturers Association, Inc., held in Hollywood Beach, Fla., recently, **John P. Baum** vice-president in charge of the woolen and worsted division of J. P. Stevens &

Mr. Baum

Co., Inc., was elected president. **G. H. Smith,** general manager of the Lindale (Ga.) division of Pepperell Manufacturing Co., was elevated to vice-president, and **Robert Train,** president of the Bibb Manufacturing Co., Macon, was elected treasurer.

Sam Klein has been appointed publicity coordinator for The Wool Bureau, Inc. **George A. Jeandros** has joined the department of science and technology. Mr. Jeandros will work directly with men's suit and trouser

For further information use Handy Return Card, Page 187



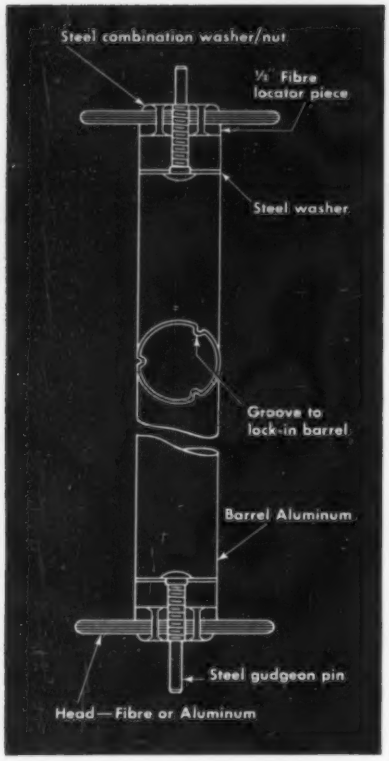
actual mill operations prove...

Saco-Lowell's Double Doffer Increases No. 11 Condenser Cleaning Efficiency 100%

In more than 9 additional mills each month, textile men are proving that the Saco-Lowell Double Doffer actually doubles the cleaning efficiency of the Standard No. 11 Condenser. This new Double Doffer reverses the cotton mat, allowing both sides to be cleaned by the air stream. Results? 100% to 120% more dust, waste and fine pepper trash are removed in the No. 11 Condenser, giving cleaner yarn without the expense of new machinery. And the Double Doffer eliminates the necessity for extra processing that can result in broken fibers and increased neps.

Investigate Saco-Lowell's Double Doffer yourself. Like all Saco-Lowell products, it's **built for better performance, backed by better service.**

SACO-LOWELL SHOPS
REPLACEMENT PARTS DIVISION
EXECUTIVE AND SALES OFFICES, GREENVILLE, S. C.
BRANCH SALES OFFICES: ATLANTA, GA., CHARLOTTE AND GREENSBORO, N. C., GREENVILLE, S. C., AND SACO, MAINE.



NVF'S NEWLY-PATENTED* "LE" JACK SPOOL FOUR WAYS BETTER!

Now, give your carded wool yarn processing all the high production, high precision advantages of patented "LE" Jack Spool efficiency.

This proven "LE" Jack Spool can mean important dollar savings to you:

1. TIGHTER HEADS! Plus ease of head replacement right on the job! Only four movements required to replace—downtime and repair shop expense are greatly reduced.

2. SHOCK ABSORBING! Heavy-duty fibre *locator piece* riveted inside the spool head serves to absorb shock, give a new spool resilience that resists sharp blows, sudden drops and drive shocks.

3. REDUCED BREAKAGE! Repeated field tests prove the new fibre *locator piece* reduces denting and breaking by reducing bobbin rigidity.

4. ASSURED CONCENTRICITY! Precision manufacturing, light weight, tight heads, and a new resilience, combine to prevent loss of concentricity for truer, smoother running.

Add to these advantages Lestershire's aluminum barrel-fibre head efficiency and you are assured a damage-resistant, hard working Jack Spool that can improve your carding operations.

Write for your free copy of *Lestershire Bobbins*, a comprehensive catalog on modern spool and bobbin design. Address Dept. W-6.

*The NVF "LE" Jack Spool has been granted U.S. Patent #2,986,357.

NVF

NATIONAL VULCANIZED FIBRE COMPANY
LESTERSHIRE DIVISION, Hartwell, Georgia

Mr. Poole
N. C. Finishing

Mr. Hollis

Mr. Fairchild
American Thread

Mr. Johnson

manufacturers on the technical aspects of the permanent creasing process for all wool. **Miss Grace Van Dyke** has been advanced to the post of advertising and promotion coordinator.

George A. Bates has joined American Finishing Co., Memphis, Tenn., as assistant to the president.

William McBee has rejoined The American Thread Co., Inc., as asst. superintendent of the Willimantic, Conn., finishing division. **Charles S. Johnson** has been promoted to asst. general manager and **Rex Fairchild** has been advanced to superintendent.

James E. Hollis, Jr., has been named coordinator of the newly created "Better Methods" department of North Carolina Finishing Co., Salisbury, N. C. * * * **W. C. Rogers,** formerly night supervisor, has been named general foreman of the cotton put up department. **W. M. Poole** has assumed duties of night supervisor.

For outstanding contributions to the knowledge of color in science,

Mr. Rogers
N. C. Finishing

Mr. McBee
Amer. Thread

art, and industry, **Miss Dorothy Nickerson,** color technologist, cotton division, agricultural marketing service, U. S. Department of Agriculture, was recently named as the third recipient of the Godlove Award of the Inter-Society Color Council.

L. D. Sayers, executive assistant of the Opp and Micolas Cotton Mills, Inc., Opp, Ala., has resigned.

Douglas H. Sears, formerly treasurer of Saco-Lowell Shops, has accepted a like position with Pepperell Manufacturing Co.

C. Richard Eichorn has been named manager of Dixie Quilting Co., division Proximity Print Works.

OBITUARIES

Edward H. Atkins, 69, general overseer of carding for all plants of Alice Mfg. Co., Easley, S. C.

Barrie Bascom Blackwelder, Sr., 76, chairman of the board at Quaker Meadows Mills, Inc., Hildebran, N. C.

Cason J. Callaway, Sr., 66, retired president of Callaway Mills Co., LaGrange, Ga.

William Norman Freyer, 57, executive vice-president of Bigelow-Sanford, Inc., New York, N. Y.

Col. Thomas Jones, 71, first commanding officer of the Quartermaster Purchasing office in New York and head of textile and clothing procurement for the Army and Air Force during World War II at Philadelphia (Pa.) Quartermaster Depot.

John Land, 56, president of Textiles, Inc., and its subsidiary, Threads, Inc., Gastonia, N. C.

John Alexander McPherson, 81, chairman of the board of McPherson Co., Greenville, S. C.

Clarence L. Meyers, 75, founder and chairman of Clarence L. Meyers & Co., Inc., Philadelphia, Pa.

W. L. Robinson, 59, secretary and treasurer of Parkdale Mills, Inc., Gastonia, N. C.

Hartman F. Schmidt, 72, retired professor of woolen and worsted yarn manufacturing at Lowell Technological Institute and plant manager of Charles W. House & Sons, Unionville, Conn.

Archie E. Tanner, vice-president and treasurer of the Figel Knitting Mill, Albany, N. Y.

R. W. Wurst, Jr., 41, regional sales manager for the Industrial Chemical Division of Pennsalt Chemicals Corp., Atlanta, Ga.

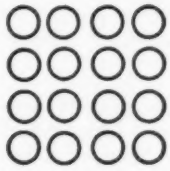
For further information use Handy Return Card, Page 187

ANOTHER FIRST by Ideal

FIRST with

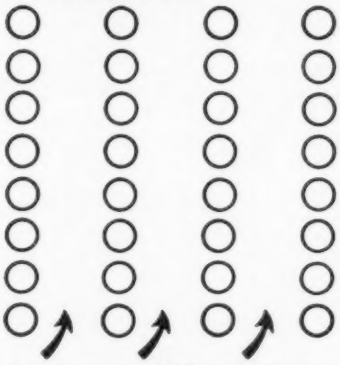
- **High Speed Drawing**
- **Ideal Feathertouch* Action**
- **A 2 Delivery American Frame**
- **In Sales**

Ideal 750 — 2 deliveries



All cans easily reached from aisle on each side of frame.

4 delivery frames



Interior aisle space needed for access to cans.

IDEAL Feathertouch 750

NOW FIRST with the Ideal Compact Creel

Ideal originated high speed drawing and has led in every subsequent increase in frame speed — from the original 120 fpm to today's Ideal speed of 750 fpm. Ideal originated the famous Feathertouch Action which never bruises or cuts fibre. Ideal designed and built America's first 2 delivery frame . . . the only frame built sturdily enough to take continuous speeds of 750 fpm. And, in the past two years, we believe that Ideal has produced more drawing equipment for American mills than has any other manufacturer.

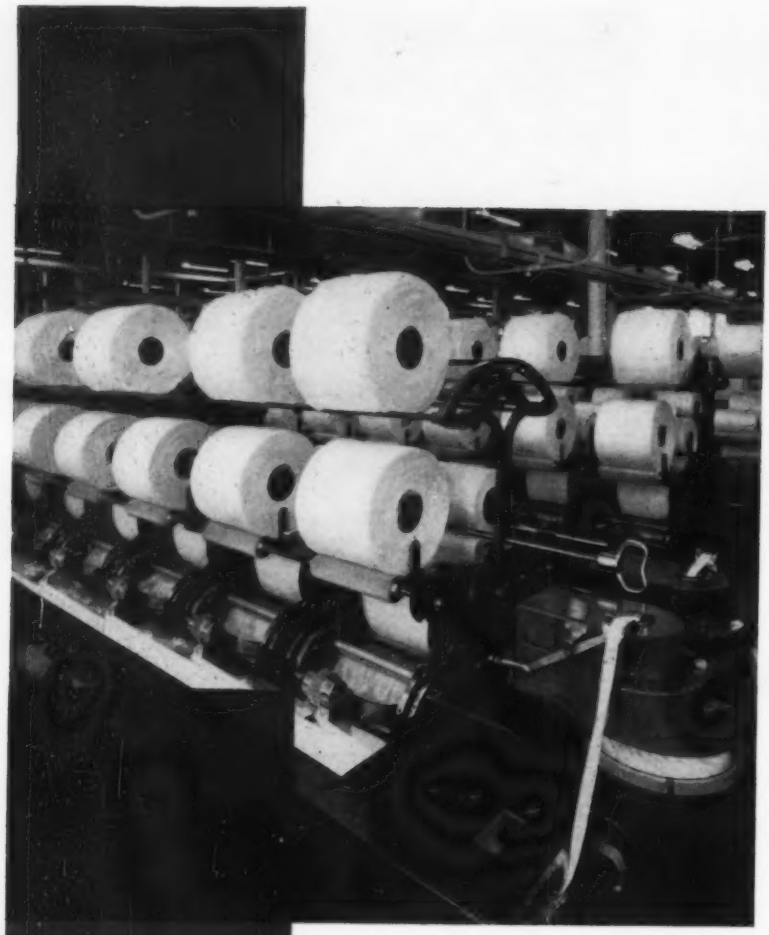
. . . NOW the Ideal Compact Creel on the super-speed 750 enables you to get more high quality production in 60% of the space required by any 4 delivery drawing frame. This saving of valuable floor space is just another extra dividend you get from Ideal Feathertouch Drafting.

Get the full story on Ideal's many advantages before you buy any drawing equipment.

*Trade Name — Patented

Ideal Industries, Inc.
Bessemer City, N. C.

THE ORIGINATORS OF HIGH SPEED DRAWING



Sauce for the Gander?

Like most, you probably have a number of machines on your production line that were equipped from the start with Bijur Automatic Lubrication. If so, you've probably noticed that these Bijur-equipped machines cost slightly less to maintain and are slightly better producers than most of their neighbors. On one machine, of course, the difference may be small. But multiplied by the total number of machines on your production line, the difference becomes one that your Cost Accounting will spot just as quickly as your machine operators.

And it can be done. Bringing every machine up to par with a Bijur Lubricating System is a lot easier than you might expect. Inexpensive, too. Why not write today for complete information on how (and for how little) Bijur can be added where needed?

BIJUR LUBRICATING CORPORATION

155 West Passaic Street • Rochelle Park, New Jersey

Pioneers in Automatic Lubrication

4215

MILL NOTES

An addition of approximately 12,000 sq ft of manufacturing space on the south side of the present plant, has been completed at **Stedman Mfg. Co.,** Asheboro, N. C. Modern equipment is being installed, providing employment for 80 to 100 additional employees. A future addition of 18,000 sq ft will be used for knitting, bleaching, dyeing, cutting, sewing, and packaging. Plans also call for a paved and lighted parking area for employees and visitors.

The plant and equipment of **Union Knitting Mills,** Philadelphia, Pa., have been purchased by Alvin Cohen. The company will be known as **Alvin Knitting Mills** but will trade as Union Knitting Mills and Crown Prince Sportswear Corp. There will be no halt in production and sales will be handled directly from the mill.

Whitmire (S. C.) Hosiery Mills, Inc. will expand the manufacture of seamless hosiery following completion of a 6,000 sq ft addition to the plant. One hundred and sixty-three machines will be installed and employment increased for a three-shift operation.

United States Rubber Co. in the last month has tripled the number of looms producing stretch fabric. Designated "Contour Cloth," the fabric is manufactured at the Winnsboro (S. C.) plant. It is 34 per cent nylon, 33 per cent acrylic, and 33 per cent viscose.

A new firm, **Von-Tex Hosiery Mills, Inc.,** has been formed in Asheboro, N. C., for the manufacture of seamless hosiery. The equipment has been housed in a recent addition to the Vuncannon Hosiery Mill.

Acme Hosiery Mills, Inc., and McCrary Hosiery Mills, Inc., both located in Asheboro, N. C., have merged operations. The resulting company has been designated **Acme-McCrary Corp.**

A $4 million plant is being constructed adjacent to the present White Horse mill in Greenville, S. C.,

For further information use Handy Return Card, Page 187

VOLUME

Large Ventilation in Low-Cost "Packages"

'BUFFALO' PACKAGE PROPELLER FANS

- *Low First Cost*
- *Low Installation Cost*
- *Peak Efficiencies*
- *Ideal for Ventilating Large Open Areas*
- *Sizes for All Needs*

When you need low-cost ventilation for a small area—or for a huge plant... 'Buffalo' Package Propeller Fans are the answer. Sizes from 24" to 144". Capacities up to 250,000 CFM. Unusually quiet performance is assured by highly efficient slow fan speeds. 'Buffalo' Package Propeller Fans are ruggedly built for complete reliability in the severest industrial ventilation and exhaust service.

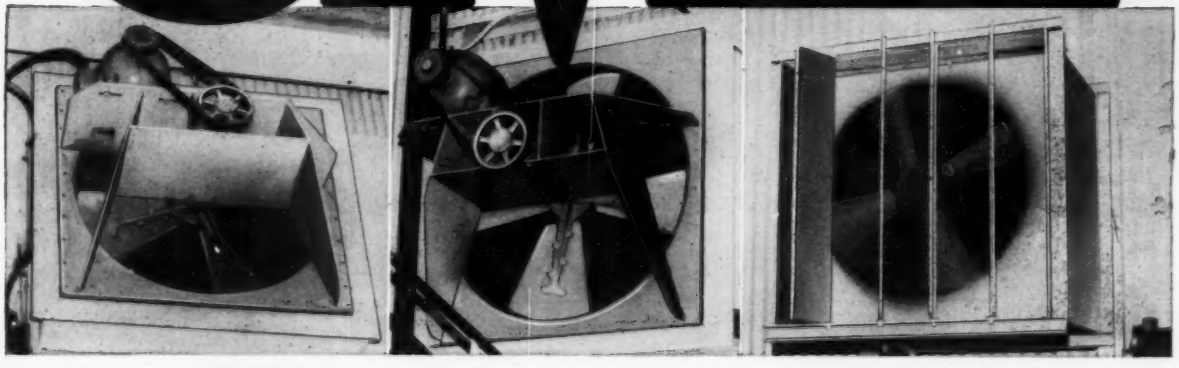
CHECK THESE SUPERIOR 'BUFFALO' FEATURES: The 'Buffalo' Package Propeller Fans shown have logged years of low cost service in a large paper mill. Note heavy-duty construction: ¼" flanged steel plate panel—⅜" gussets supporting motor and drive-heavy steel bladed wheel welded to sturdy cast steel spider. These quality fans are statically and dynamically balanced and test-run at the factory.

Also available with motor-controlled louvers on inlet side of fan.

'BUFFALO' BUILT MEANS QUALITY THROUGHOUT. In these husky fans you'll enjoy the many benefits of 'Buffalo's' uncompromising attention to QUALITY. With 'Buffalo' products, you realize the true long-range economy of quality.

Ask your nearby 'Buffalo' engineering representative about the many uses for these heavy-duty fans.

Or write direct for Bulletin FM-1234.



"Buffalo"

AIR HANDLING DIVISION

BUFFALO FORGE COMPANY

Buffalo, New York

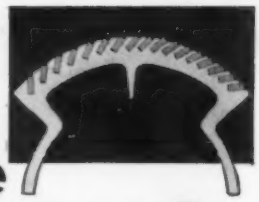
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

'Buffalo' Air Handling Equipment to move, heat, cool, dehumidify and clean air and other gases.

'Buffalo' Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.

'Buffalo' Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.

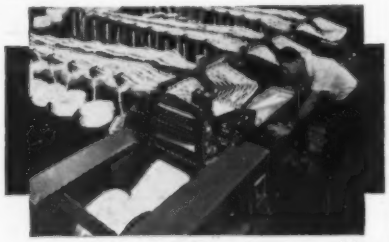
Squier Machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.



the Super J Comber's "RUNNING MATES!"

The Even-Draft High Speed Drawing Frame plays an outstanding part in the Whitin system for the unsurpassed processing of either carded or combed sliver. It is equally effective for the pre-combing or post-combing operation.

The Whitin Even-Draft operates at speeds up to 600 ft. per minute on carded stock (or 450 ft. on combed), producing sliver characterized by its evenness and uniformity.



The Whitin Super Lap machine offers a completely new concept in the preparation of Comber laps, effectively superseding all earlier lap forming techniques.

This most unusual new machine processes laps of superior quality from either 48 or 60 ends of drawn sliver, with weights of up to 1200 grs./yd.

Its production capacity is approximately 500 lbs. per hour, turning out laps weighing 35 lbs.

WHITIN

MILL NOTES

(from page 44)

by **Maverick Mills, Inc.** The mill will employ approximately 150 persons and will have 600 50-inch looms for the manufacture of wide cotton fabrics.

All weaving operations of **Yorkshire Worsted Mills,** Lenni, Pa., have been transferred to the Woonsocket, R. I., plant, and all dyeing and finishing operations to the Lenni facility. The move was made to improve operating efficiency.

Sanco Piece Dye Works, Philipsburg, N. J., has announced the formation of a wholly owned subsidiary, **Sanco Textile Print Works.** The new division is located in the building occupied by the parent firm. Arthur Nazzaro is superintendent.

An addition of 7,000 sq ft of manufacturing space and 4,000 ft of space for the installation of a new plant-wide air conditioning system has been completed at the Tuxedo, N. C., plant of **J. P. Stevens & Co., Inc.** New machinery will be installed and existing machinery modified to increase production.

Franklin Decorative Yarns, Inc., Lavonia, Ga., has announced the acquisition of the novelty yarn business of **Craftspun Yarns, Inc.** W. Ray Rogers is manager.

Corlin Processing Co., Landis, N. C., has announced an expansion program which will include a 7,500 sq ft addition to the main plant to increase grey yarn storage, a new 1500 -pound package dyeing machine, heat reclamation facilities, and a bulk hydrogen peroxide storage and distribution system.

A new building to house a garneting plant for **Hale Manufacturing Co.** has been completed in Foley, Ala. James O. Gamble is manager.

Spartan Mills has announced plans to construct a two-story structure which will link the two present plant units located in Spartanburg, S. C. The 40-inch looms now in use will be replaced with 60-inch looms. The project is estimated to cost $300,000.

Lohrke Textiles, Inc., Philadelphia, Pa., has expanded its synthetic top manufacturing operation and is now offering yarns for industrial and specialty apparel uses. The firm has acquired the business of J. L. Lohrke Co., including Garth Manufacturing Co.

Employees of the finishing plant at the Trion, Ga., division of **Riegel Textile Corp.** recently received an engraved plaque from the Georgia Textile Manufacturers Association, Inc., for their outstanding safety record during the 1960 Textile Safety Contest sponsored by the Association—1,148,996 manhours without a lost time accident. G. Howard Smith (right) of Pepperell Mfg. Co., Lindale, Ga., and vice-president of the Association, presented the award to Norman Crouch, who accepted it on behalf of the employees.

Mount Hope Finishing Co. has discontinued operations at the Henderson, N. C., plant and moved all operations to the Butner, N. C. facility.

Approximately 111,000 sq ft of floor space will be created with the completion of the two-story and basement addition at the Trion, Ga. division of **Riegel Textile Corp.** The new building will house looms from the present No. 3 weave room and that area will be utilized as an opening room.

American & Efird Mills, Mount Holly, N. C., has merged the textured yarn division into the spun fibers division. Frank A. Farnell, vice-president, has been placed in charge of the combined operation.

Kimberly-Stevens Corp. has announced an expansion program for its nonwoven fabrics plant in Westfield, Mass.

Carroll Hosiery Co., Hillsville, Va., has ceased operations.

Spurgeon Hosiery Corp. has announced plans for the construction of a modern manufacturing plant and offices in Lincolnton, N. C. Total cost of the project will be in excess of $300,000, with completion expected by late summer.

Shuford Mills, Inc., Hickory, N. C., has announced plans for an addition at the Brookford plant to house a

For further information use Handy Return Card, Page 187

NOW!

get up to 20% more production

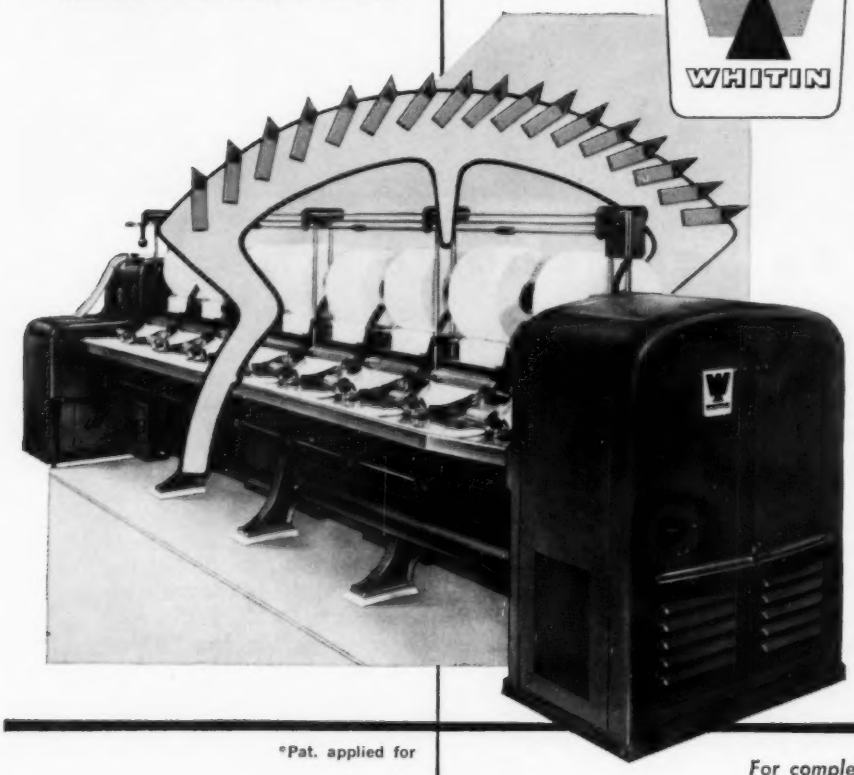
with the WHITIN Super J Comber

and the brand new "GOLDEN CIRCLE"* HALF LAPS

Get full-needle lap penetration and excellent quality combing using 1200 grain laps.

The Whitin Super "J" Comber has already earned an international reputation for its high production and trouble-free performance — but now, with the brand new Golden Circle Half Lap, its production potential is greater than ever.

The Golden Circle Half Lap is the patented product of Whitin research — an extensive research effort "zeroed in" on one objective only, to design and produce a half lap to excel all others in the "quality" combing of heavy grain laps. On Model J5 and J6 Combers, the Golden Circle Half Lap offers you:



SPECIAL FEATURES . . .

- Full-needle lap penetration.
- Lap processing up to 1200 grains.
- Anodized aluminum construction — lighter and stronger.
- Needle strips bonded in slots for greater rigidity.
- Progressive row needle spacing reduces plucking.
- Runs cleaner — stays cleaner.
- Consistent and better nep removal.
- Contoured for better air flow in piecing zone.
- Reduced brush wear.

*Pat. applied for

For complete information ask your Whitin representative or write direct to us.

WHITIN MACHINE WORKS

WHITINSVILLE • MASSACHUSETTS

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

The best way to better yarns

brought to your door

Now you can have scale, rust, grease and other objectionable deposits removed from your boilers, condensers and other heat exchange equipment. An Anderson Chemical Company mobile cleaning unit will come to your plant, anywhere in the Southeast, and remove those unwanted deposits. The special equipment and technical knowledge required are brought to you at a time when your equipment can be out of service for 24 hours without hampering production.

The Anderson Emergency Chemical Cleaning Service does not require long shutdowns for your equipment to be dismantled and re-assembled. First, an Anderson service representative will have your scale and rust problems analyzed by an experienced laboratory staff. Then a proposal will be made to you without obligation. On a scheduled date of your choice the mobile unit and a service representative will come to your plant and conduct the entire operation. The *field-proven* cleaning methods used assure maximum protection of your equipment during the cleaning process. You'll find the cost very reasonable with satisfactory results guaranteed.

But the Anderson service doesn't stop there . . . one of their trained service representatives will help you *keep it clean* by outlining a simple preventative maintenance program.

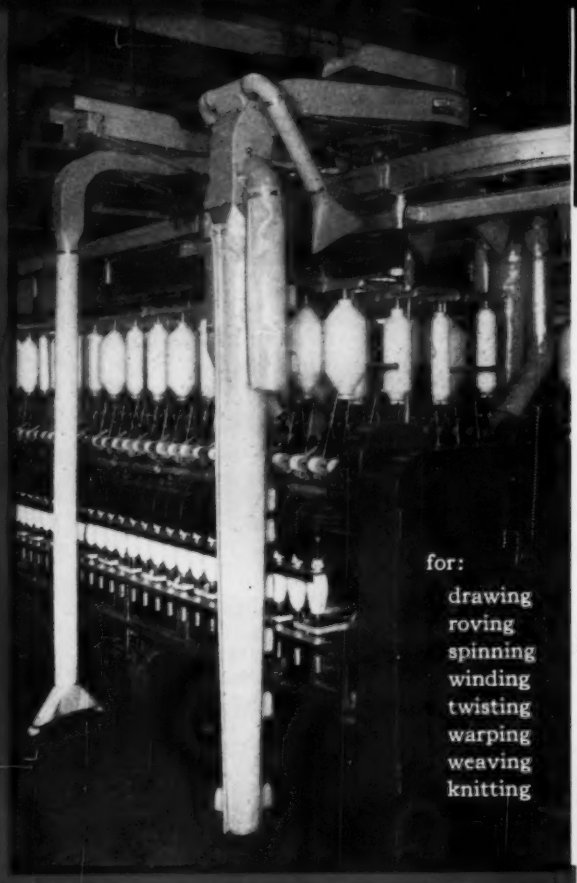
For complete details and an analysis of your water treatment problems, write today. There is no obligation.

SPECIALISTS IN MAKING
WATER BEHAVE

Anderson Chemical Company, INC.
Macon, Ga., Box 1424 • Phone Sherwood 5-0466
Memphis, Tenn.: Box 2432, DeSoto Station • Phone: BRoadway 2-2806
Dallas 7, Texas: Box 10444, Industrial Station • Phone: RIverside 8-7080

For further information use Handy Return Card, Page 187

Parks-Cramer

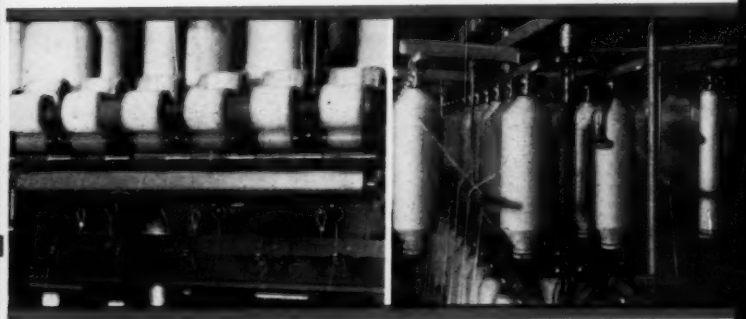


for:
drawing
roving
spinning
winding
twisting
warping
weaving
knitting

Traveling Cleaners

BLOWING UNITS
for machines and room surfaces

COOPERATING VACUUM UNITS
with and without automatic disposal



SpinSaVac
END COLLECTION

SpinSaCreel
ADJUSTABLE

Quality equipment
for new and existing frames

Certified Climate

Atomizer humidification
Automatic Airchangers and Central Station systems
with and without refrigeration

420

Parks-Cramer Company

FITCHBURG, MASS. CHARLOTTE, N.C. ATLANTA, GA.

MILL NOTES

(from page 46)

wool spinning division for making carpet yarns. The unit is expected to be in operation by January, 1962.

Elk Cotton Mills, Fayetteville, Tenn., and **Brower Mills, Inc.,** Hope Mills, N. C., have merged. The merger is a prelude to modernization of Brower Mills with expenditure of approximately $500,000.

Cone Mills Corp., Greensboro, N. C., recently purchased 10 new diesel transport trucks for transporting grey

goods and raw materials to the plants to help meet production schedules. A new service garage has been constructed to maintain the fleet of trucks. The 40-foot long, aluminum trailers have the Cone emblem emblazoned on all sides in red, white, and blue.

The United Piece Dye Works has announced the opening of a modern new plant in Bluefield, Va., for dyeing and finishing fabrics composed of all the various man-made fibers now on the market.

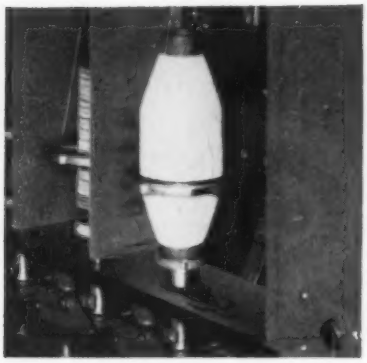
Keystone Fabric Laminates, Inc. recently subleased approximately 10,000 sq ft on the first floor of an industrial building on the northeast corned of I and Ontario Streets in Philadelphia, Pa. The company will use the premises for its exclusive process of laminating urethane foam to knitted and woven products.

Fulton Cotton Mills, Inc., Atlanta, Ga., is now producing printed upholstery materials, handling the entire process from raw cotton to the output of finished fabrics in a completely integrated function. The firm is also producing decking materials that are color coordinated with the various designs available in the printed upholstery fabrics.

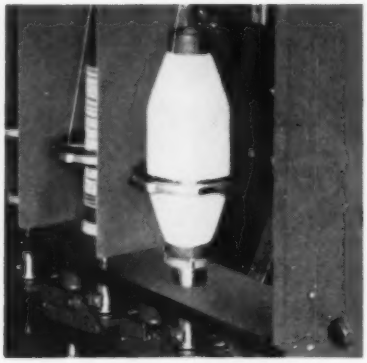
Madison (N. C.) Throwing Co., Inc., has purchased Baldwin Processing Co., Milledgeville, Ga., which will continue to operate as in the past. C. T. Sutherland, vice-president in charge of manufacturing for Madison, will manage the Milledgeville facility.

The Governor's Safety Award was recently presented to the Milltown plant of **Chicopee Mfg. Corp.,** an affilate of Johnson & Johnson, for

white NON-FLUID OIL
TRADE MARK REGISTERED



Ordinary Oils or Greases
Spatter onto Bobbins



White NON-FLUID OIL
Stays on Rings

If you are harried by broken yarn ends, blackened yarn and low output there is a simple solution . . . . switch to white NON-FLUID OIL.

Ordinary liquid oils drip and spatter on bobbins . . . . greases cause yarn strain from traveler friction on rings.

White NON-FLUID OIL stays on rings and off goods in process. It provides 100% lubrication resulting in increased production. Because of this, you need less lubricant and fewer applications, making white NON-FLUID OIL the most economical to use.

White NON-FLUID OIL is the preferred lubricant in the textile industry. You can learn why by writing today for a free testing sample and Bulletin T-16.

NEW YORK & NEW JERSEY LUBRICANT CO.

292 Madison Ave., New York 17, N. Y.
WORKS: NEWARK, N. J.
Sou. Dist. Mgr.: Fred W. Phillips, Greenville, S. C.
WAREHOUSES:

Atlanta, Ga.
Birmingham, Ala.
Charlotte, N. C.
Columbus, Ga.
Greensboro, N. C.
Greenville, S. C.
Providence, R. I.
Springfield, Mass.
Chicago, Ill.
Detroit, Mich.
St. Louis, Mo.

1898 65 YEARS 1961 SIXTY-FIVE YEARS OF LUBRICATION SERVICE TO INDUSTRY NON-FLUID OIL

NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture. So-called grease imitations of NON-FLUID OIL often prove dangerous and costly to use.

For further information use Handy Return Card, Page 187

YOU'LL MAKE MONEY...

YOU'LL MAKE MONEY

When the Hunt Let-Off controls warp tension, keeps it even and constant.

YOU'LL MAKE MONEY

When the Hunt Let-Off eliminates seconds due to wavy lines, thick-and-thin places, set marks caused by loom stops to adjust tension.

YOU'LL MAKE MONEY

When the Hunt Let-Off enables your looms to weave miles and miles of perfect cloth.

YOU'LL MAKE MONEY

When the Hunt Let-Off eliminates the need for tension adjustments, reduces inspection time, makes your weave room more efficient.

YOU'LL MAKE MONEY

When you install the Hunt on looms in use, specify it on new looms from C&K or Draper.

For complete details about the Hunt Let-Off Write, wire or phone for free booklet.

SOMACO

SOUTHERN MACHINERY COMPANY
Box 3217—Station A • 5806 Augusta Road
Greenville, South Carolina • CRestwood 7-2116

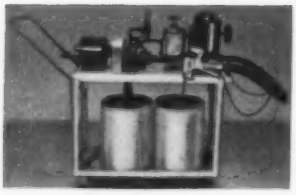
In Europe or India:
Casablancas High Draft Co., Ltd.
Bolton St., Salford 3, Manchester, England

The 39th annual inspection of the Alabama plants of **Avondale Mills** was completed recently. During a four-day period Avondale officials and their guests viewed operations in mills at Stevenson, Lafayette, Pell City, Birmingham, and Sylacauga. The lunch stop shown in these TI staff photos was at Lafayette, with barbecued chicken for the main course. Inside-mill scenes, Eva Jane plant.

having amassed 3 million man-hours without a lost-time injury. The statewide safety program is cosponsored by the State Department of Labor and Industry and the New Jersey Industrial Safety Committee.

Philadelphia & Reading Corp., has announced the acquisition of **The Fruit of The Loom, Inc.**

CHOOSE and the WICACO ROLLER BEARING SPINDLES Spindle Oiling Machine



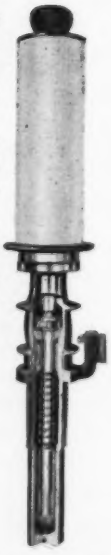
The new improved Wicaco Spindle Oiling Machine has many new features required by present day mills — including low cost. Smaller than previous models, and lighter, it provides greater flexibility and efficiency. Economical to use, with lower first cost, the new style, improved filter system cleans old oil for re-use and longer life, and it operates with as little as one gallon of oil. A new filter gauge tells when filters need changing, and a relief valve permits full control of pressure from 0 to 35 lbs. Order one today and see how it will improve your maintenance operation.

SINCE 1868

Since 1935, when Wicaco Machine Corporation first introduced Roller Bearing Spindles to the textile mills, Wicaco Roller Bearing Spindles have been preferred by most mills because of their dependability and long, trouble-free life.

Wicaco Roller Bearing Spindles cost no more than ordinary spindles, yet they reduce operating costs and increase the users' profits. It takes less power to run them, and they increase production.

Replace your present spindles, regardless of type, with more efficient Wicaco Roller Bearing Spindles, and start counting your increased profits. We will design them to meet your particular requirements. Write today for quotations.



WICACO MACHINE CORPORATION

4800 STENTON AVENUE

WAYNE JUNCTION PHILADELPHIA 44, PA.

For further information use Handy Return Card, Page 187

PROBLEM: Streaks in finished cloth

The cloth was woven from a blend of acetate and viscose rayon yarn. The streaking resulted from the acetate having an affinity for viscose dyes. Tests showed a slight akaline condition on the surface of the tube used as a carrier for the acetate yarn. This was the cause of the trouble.

Sonoco then developed tubes having surfaces within the neutral range. These carriers had no effect on the yarn and the streaking problem was eliminated.

Technical service of this type is an added benefit when you buy from Sonoco. *Only Sonoco,* in its field, provides the continuous research, product development and integrated manufacturing needed to meet the ever-changing techniques of the textile industry. *Let Sonoco's more than 60 years' experience help you!*

SONOCO
Products for Textiles

sonoco
WORLD WIDE SERVICE
PAPER PRODUCTS

SONOCO PRODUCTS COMPANY, HARTSVILLE, SOUTH CAROLINA • Mystic, Conn. • Akron, Ind. • Ravenna, Ohio • Lowell, Mass. • Holyoke, Mass. • Phillipsburg, N. J. • Longview, Texas • Philadelphia, Pa. • La Puente, Calif. • Fremont, Calif. • Atlanta, Ga. • Richmond, Va. • **MEXICO:** Mexico, D.F. • **CANADA:** Brantford, Ont. • Granby, Quebec

3073

SUPPLIER NOTES

A new dyeing, bleaching, and finishing laboratory, which will provide improved technical services to their customers, will be established in Charlotte, N. C., by the Dyes and Chemicals Division of **E. I. du Pont de Nemours & Co., Inc.** The facility is expected to be completed early this fall.

Dr. Robert C. Edwards, president of Clemson (S. C.) College, has been elected to the board of directors of **Draper Corp.**

A. R. Thompson, sales representative for the southern district for **Ciba Co., Inc.**, has retired. Roy D. Wiggins and Donald A. Gardner have joined the company as technical representatives, working out of the Charlotte, N. C., office. A. L. Perrin has been named manager of the midwest district succeeding J. Gordon Stott, who has retired.

Dow Corning Corp. has expanded its laboratory and production facilities in Greensboro, N. C. Two new buildings, each with approximately 10,000 sq ft, have been completed. One building houses new production and warehousing facilities for Sylmer brand silicone textile finishes; the other contains complete laboratory facilities for technical service, product development, and quality control. Robert E. Vidal is manager of the Greensboro division.

John W. Ingle has been named president and treasurer of **Carolina Machinery Co.**, a subsidiary of Curlator Corp.

J. Robert Potter has been elected president and treasurer of **Lockwood Greene Engineers, Inc.**

George N. Brunt has been elected vice-president and general manager of **Southern Latex Corp.**, a subsidiary of International Latex Corp.

Charles L. Brooks has been appointed manager of the Dalton, Ga., division of **Bibb Manufacturing Co.** Mr. Brooks has been succeeded as yarn sales manager of the New York division by William A. Watson.

Richard E. Moberg has been appointed branch manager of the West Coast area for the chemical division of **General Mills.** Charles E. Pratt has been named branch manager of the Charlotte, N. C., office. The men will be responsible, in their market

THIS COUPON, SENT TO THIS ADDRESS, BRINGS

COATS & CLARK, INC.
Traveller Division, Dept. TW-51, 1292 McCarter Highway, Newark, New Jersey

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☐ Please send me samples of Coats & Clark's Nylon Travellers

☐ Yes, I would like your representative to show me how Nylon Travellers will save me time and money.

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areas, for sales of Versamid polyamide resins, GenEpoxy epoxy resins, Genamid resins, fatty nitrogen compounds, Deriphat amphoteric surfactants, and other organic chemical specialty products.

W. L. Nahrgang has been elected president and a member of the board of directors of **Johnson Motor Lines, Inc.** M. E. Sheahan has been named chairman of the board.

Albert Hart, Jr., has been elected vice-president of **Joel Hurt Factors, Inc.**

John C. Harralson has been promoted to the position of technical service representative in the applications research and service department of **The Chemstrand Corp.** In his new position, Mr. Harralson will service sweater fabric, jersey, half hose, and pile fabric manufacturers.

Trylon Chemical Corp., a new subsidiary of Trylon Chemicals, Inc., located in Greenville, S. C., is now producing its complete line of textile chemicals. Russell F. Crawford, Jr., is vice-president and general manager.

Mr. Rendino
Foxboro

Mr. Dionne
Reeves

C. Charles Rendino has joined the textile industries sales division at the home office of **The Foxboro Co.**

Larry D. Crisler has been appointed a junior representative for **Union Special Machine Co.** Mr. Crisler will assist in serving the Nashville, Tenn., territory. * * * The firm has announced that sales of its Lewis product-machines, parts, needles, and service throughout the U. S., and Canada, will be handled through its own sales organization as well as through some of the long established agents.

Jack W. Rettew has been appointed sales manager for the southern divisions of **Fletcher Industries.** Mr. Rettew will be headquartered in the Fletcher Southern Pines (N. C.) division, and will act as liaison between this plant and the operation in Statesville, N. C.

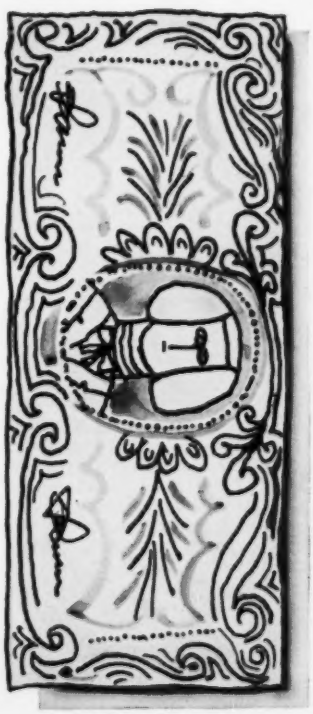
Mr. Rettew
Fletcher

Mr. Crisler
Union Special

V. J. Dionne has been appointed sales representative of the newly formed fiber division of **Reeves Brothers, Inc.** * * * The firm has established a heat laminating plant in Dalton, Ga. Designated **Curon of Georgia,** the firm will bond specially formulated Curon polyurethane foam to small rugs in addition to laminating Curon foam to all types of fabrics for apparel. Bill Myers is manager.

Continued on page 115

THIS NEW CATALOG, TO SAVE YOU $



Free! Coats & Clark's brand new 1961 catalog illustrates and describes over 250 styles, sizes, weights and types of Nylon Travellers—including a wide selection of easy-to-identify colored travellers. Look it over—and then talk to one of Coats & Clark's trained mill representatives. He'll show you how Coats & Clark's Nylon Travellers can go to work in your twisting room to cut production costs . . . keep yarn and rooms clean . . . reduce down time . . . increase output. He'll show you why Coats & Clark's Nylon Travellers are standard equipment in most of the twisting rooms in the U.S. Send in the coupon today!

The Dayco X7 combines highest resistance to ozone checking and flexing with a unique skin-like surface feel, shown clearly in micro-photo inset. The result is super finger-tip control over roving for perfect drafting of every type of fibre—natural, manmade or blend. Available in all sizes for both short and long apron systems.

The Amazing New Dayco X7 Apron Solves Many Major Drafting Problems

Exclusive, new ingredients add longer life, improve drafting, cut downtime to new lows.

Here's news of a major break-through in apron performance . . . the Dayco X7, with a special new ingredient that greatly increases the durability and the drafting effectiveness of its outer surface.

The Dayco X7 is readily identified by the Dayco triangle and arrow, as well as by the superior performance it gives on every type of drafting frame. Outstanding among its features is the skin-like texture of its outer surface. This improved surface texture made possible by Dayco's exclusive ingredient and processing gives finger-tip control. The result is smoother, easier drafting of all types of fibres and blends.

How well does the Dayco X7 meet other apron requirements?

1. Dayco X7 offers highest resistance to ozone checking.
2. Dayco X7 reduces longitudinal cracking caused by flex (hysterectic loss in molecular strength) to a minimum.
3. Dayco X7 turns without slipping, the bottom apron properly driving the top one without excessive friction.
4. The Dayco X7 inside surface provides the lowest possible coefficient of friction and maximum resistance to abrasive wear.
5. Dayco X7 meets the demand of modern drafting . . . heavier weighting, higher speeds, and higher drafts—so common to newer frames.

The Dayco X7 gives top performance in every one of these respects, and in many others. It drafts all natural and man-made fibres and blends more smoothly and efficiently.

Five years of developmental work by Dayco engineers have made the Dayco X7 a truly superior apron. And more than a year's testing "on the firing line" has confirmed their reports. In tests involving many spindle hours of actual use under every conceivable operating condition, the Dayco X7 has come through with flying colors.

The Dayco X7 is made in all sizes for both short and long apron systems. It is backed by Dayco's high standards of quality and service. It reflects the same careful design and precision manufacture as Dayco standard aprons and other Dayco textile products with which you're already familiar.

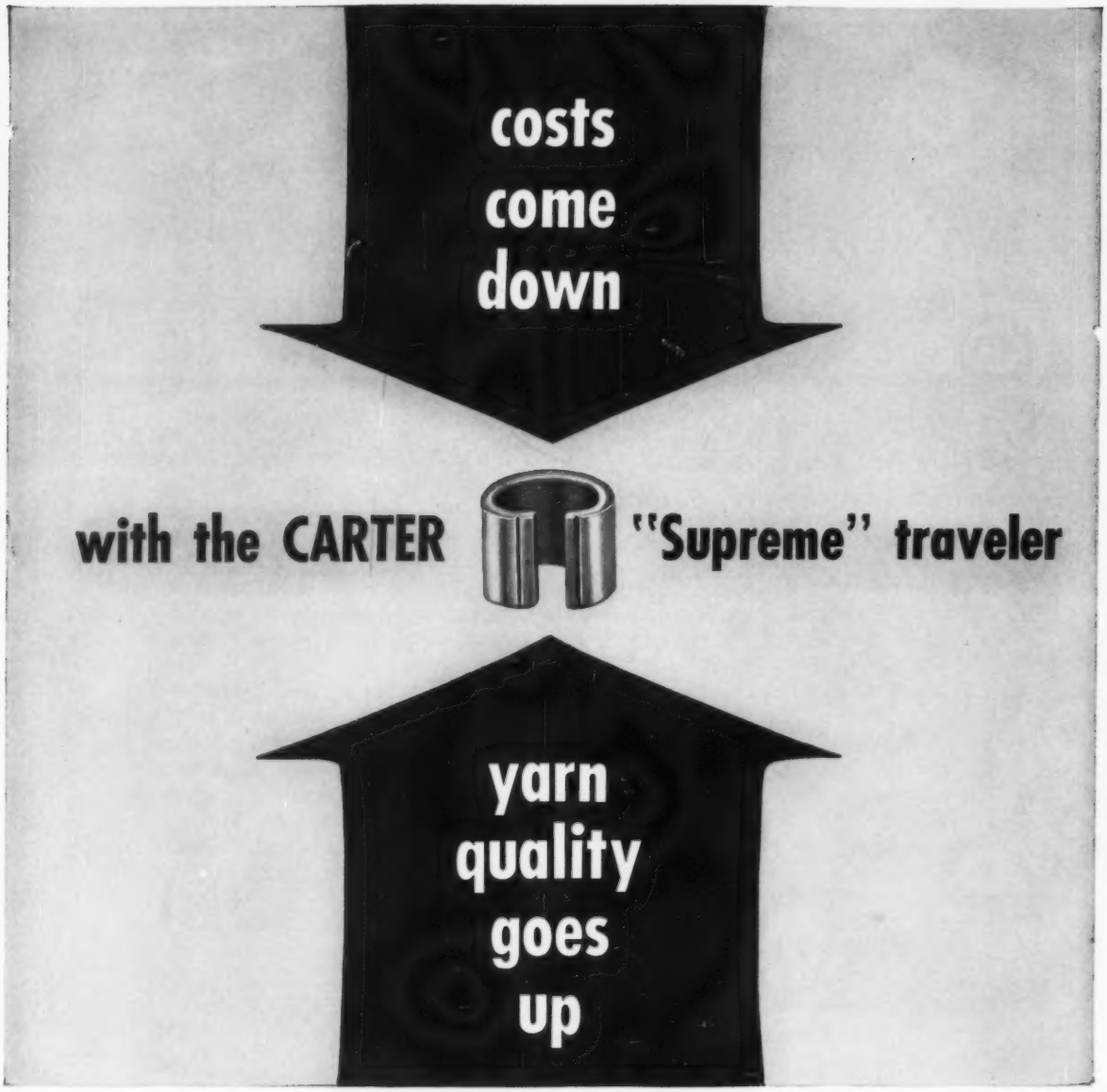
Discover the excellence of this outstanding new apron for yourself. Let your Dayco representative help you arrange a trial of the Dayco X7 in your own operation.

Phone or write Dayco Textile Products Co., 401 South Carolina National Bank Bldg., Greenville, S. C. Overseas plant: The Dayton Rubber Co. Ltd., Dundee, Scotland.

Dayco TEXTILE PRODUCTS

Dayco

Division of Dayco Corporation



Yes . . . you pay more for Carter's "Supreme" plated traveler, but you get profit-performance that justifies the name.

Problems of rust — nep control — excessive traveler changes and down time . . . are met and solved with the cost-cutting "Supreme" traveler. Pioneered by our own metallurgical laboratories . . . incorporating all of the traditional CARTER craftsmanship and quality—the "Supreme" traveler makes a material contribution to the production of finer, stronger yarn—made and sold . . . *profitably!*

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114 W. Fifth Ave., Gastonia, N. C.
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W. T. Horton.....Belmont, N. C.
D. E. Phillips.....P. O. Box 441, Clarksville, Ga.
P. L. Piercy.....Rt. 3, Chesnee, S. C.
J. R. Richie.....1307 Crabapple Lane, Raleigh, N. C.
J. K. Davis.....P. O. Box 129, Auburn, Ala.
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TRAVELER COMPANY
DIVISION OF A.B. CARTER, INC. MANUFACTURERS OF THE BOYCE WEAVERS KNOTTER GASTONIA, NORTH CAROLINA

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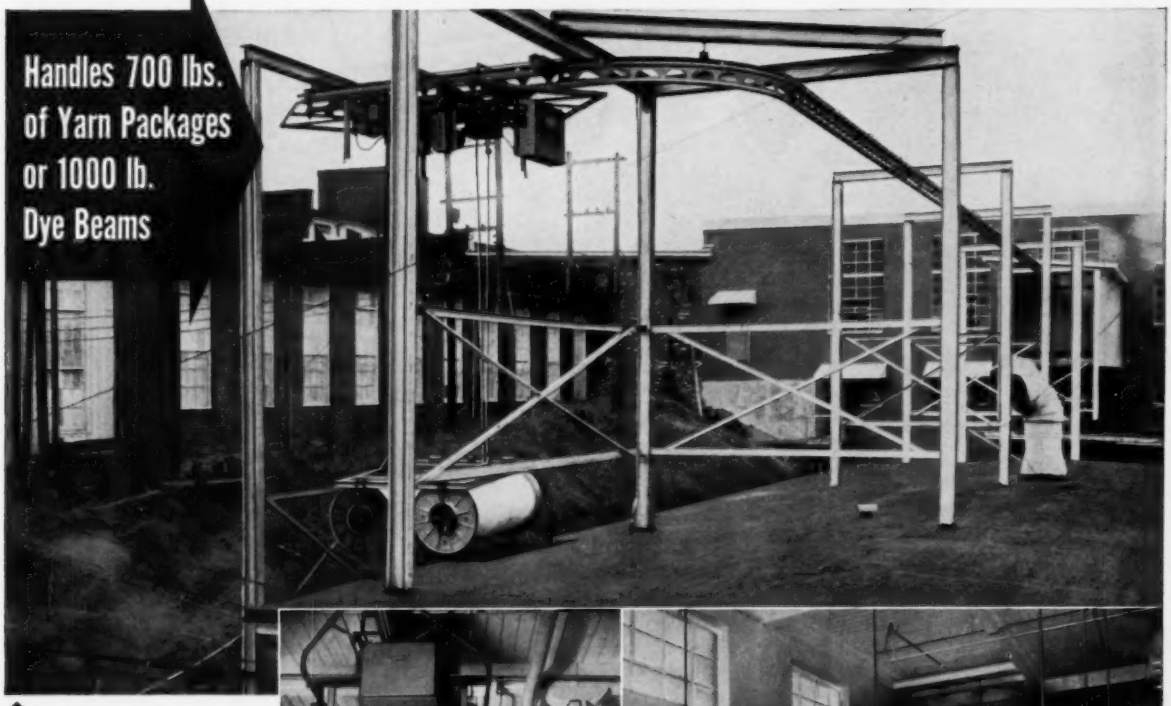
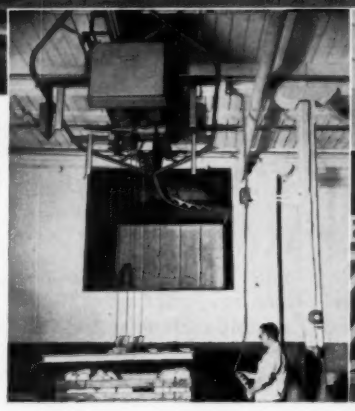
Automatic Handling System Links *FOUR* Mill Areas

Handles 700 lbs. of Yarn Packages or 1000 lb. Dye Beams



▲ **Track installation on roof. Track entrance to Quilling Dept. is protected by an enclosure. At left warp beams are being lowered 65 ft. down side of Dye House to entry below ground level.**



▶ **Starting a load of packaged yarn on way to Dye House from the Yarn Storage. The pushbutton station in the operator's hands has six buttons. Pressing any of the top three will send the carrier to one of the other three departments. The next two buttons are "up" and "down" for operating the hoist without traveling the unit. The bottom button is "stop" for the carrier travel.**

Carrier traveling through Quilling Department and about to pass through doors for trip outside over roof. The doors are opened by bumpers on the carrier.

A Cleveland Tramrail automatic handling system at the Virginia Mills, Swepsonville, N. C., has eliminated manual handling between four main yarn-preparation departments: (1) yarn storage, (2) quilling department, (3) warper room, and (4) yarn dyeing. This mill spins a wide range of cotton yarns and many man-made fibers. It specializes in making drapery, upholstery and dress goods.

Although the building is multistory and the warper room is a floor above the yarn storage, the Tramrail system serves both areas and extends to the dye house a considerable distance away. To reach the latter, much of the track is on the outside over a roof, and the load must be lifted or lowered a distance of 65 feet. The overall length of the track is 266 feet.

Push button controls are provided at each of the loading stations in the four departments. By means of these controls, the Tramrail carrier can be directed to deliver a load from one station to any of the others. The unit travels without attendants and will stop at its destination automatically.

The automatic system has proven itself a tremendous factor in providing a smooth efficient flow of materials. No longer is it necessary for workers to haul heavy loads by manually pulled floor trucks for long distances. This advantage has brought about a big saving in time, as well as floor wear, and greatly reduced the need for floor trucks.

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CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 2886 E. 287 ST. • WICKLIFFE, OHIO

The P&F Technical Service Representative can help!

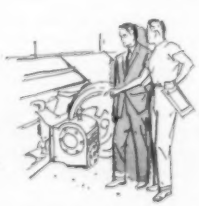
So many things can happen to interfere with smooth weaving operations! A machine can go out of adjustment, stuck ends can break the yarn, uneven tensile strength can cause warp stops, hard size problems can plague you. And while the results of the trouble may be obvious, the cause and cure are sometimes harder to discover.

That's where Penick & Ford comes in! We maintain one of the largest staffs of trained textile experts in the business. If you have used our Crown Thin Boiling Starch, Douglas Starch or Dextrine, Clearsol or Penford Gun, you know that P & F means quality. It also stands for service.

The Technical Service Representative who responds to your call is a skilled sleuth when it comes to detecting textile troubles. After studying operations in hundreds of mills around the country, he knows the trouble spots and shortcuts, and he has more answers than you can shake a spindle at. In his kit are all the tools needed for scientific detection — thermometer, viscosimeter, pyrometer, refractometer, etc. And he is well armed with 500 Penick & Ford starches and derivatives.

Even if you have no specific problem, our technician may be able to make a cost-saving or quality-improving suggestion to advance your weaving efficiency. So why not take advantage of his experience? A letter or telephone call to our Atlanta Office will bring him promptly. The address is 1531 Marietta Blvd., Atlanta, Ga. Tel.: SYcamore 4-9521.

The P & F Technical Service Representative tests yarns and textiles for abrasion resistance, etc...



Checks out your warp sizing, finishing and glazing solutions in actual production conditions...

Studies machines and methods... brings his wide experience to bear on your whole weaving operation.

Penick & Ford

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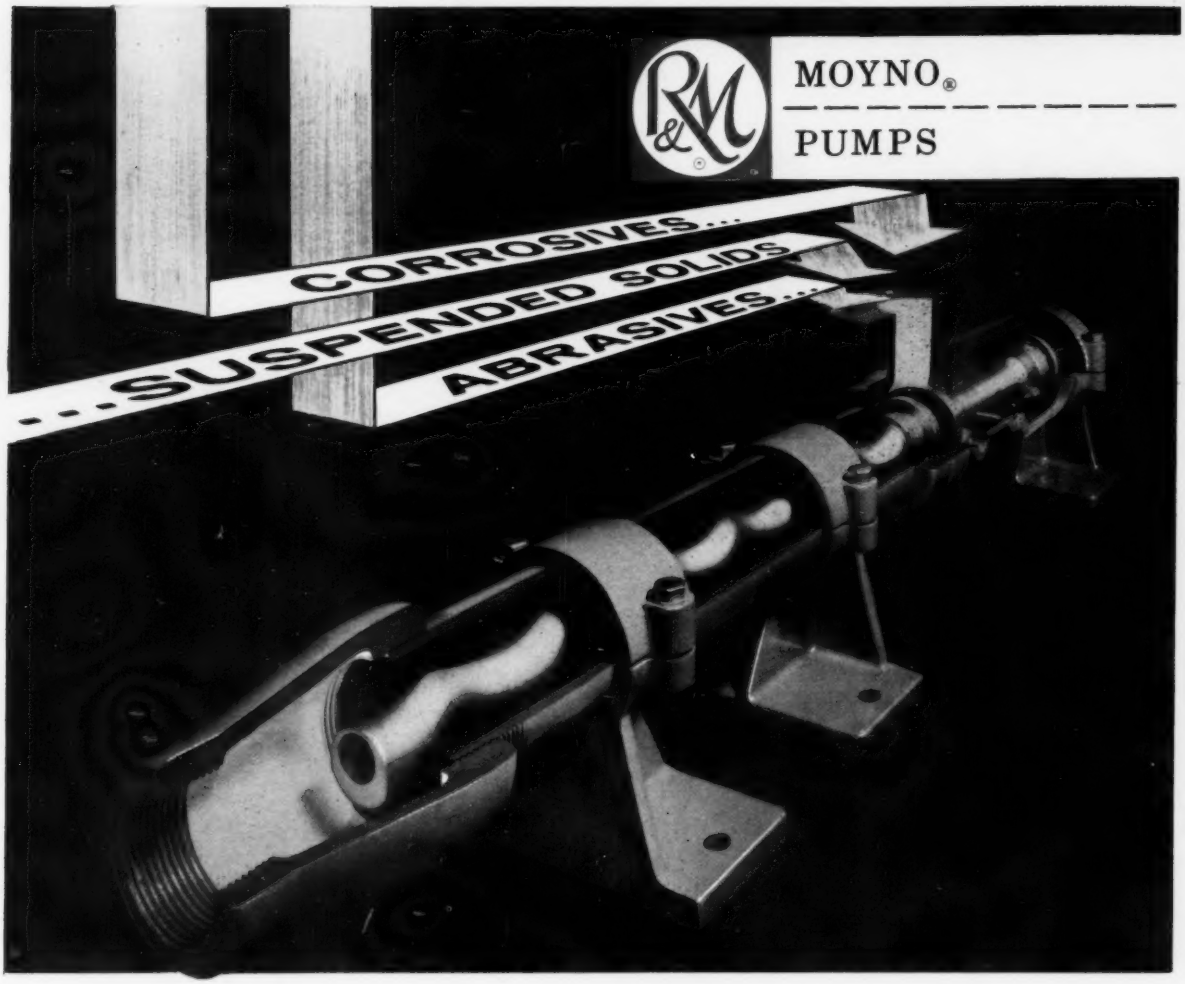
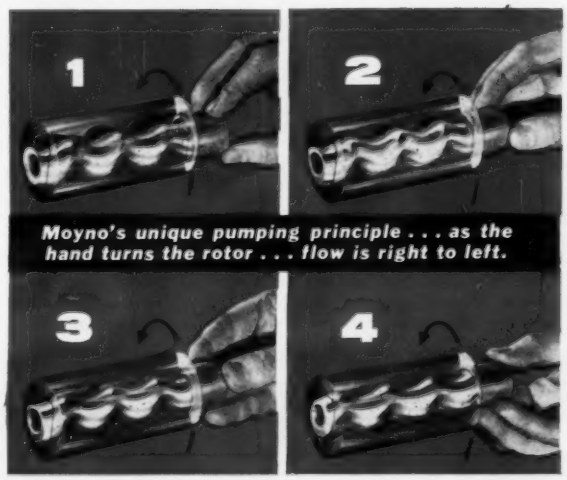


MOYNO® *solves tough pumping problems!*

Moyno's "progressing cavities" successfully handle thin watery slurries, non-pourable abrasives, gnawing corrosives or suspended solids up to 1⅛" dia.—without crushing, foaming or aerating! Material contacts only one moving part, a screw-like rotor revolving in a double-threaded stator. Where corrosives or abrasives are to be handled, rotor and stator are made of special resistant materials that minimize maintenance and prolong pump life. Many materials now pumped by Moyno were once considered "unpumpable" . . . had run up prohibitive maintenance costs on other type pumps or ruined them completely!

Moyno pumps are available in capacities to 500 gpm; pressures to 1000 psi. Learn more . . . write today for new Bulletin 100-TI!



Moyno's unique pumping principle . . . as the hand turns the rotor . . . flow is right to left.

ROBBINS & MYERS, INC., Springfield, Ohio

Fractional and Integral HP Electric Motors • Electric Hoists and Overhead Traveling Cranes • Moyno® Industrial Pumps
Propellair® Industrial Fans • R & M-Hunter Fans and Electric Heat • Trade-Wind Range Hoods and Ventilators
Subsidiary companies at: Memphis, Tenn., Pico Rivera, Calif., Brantford, Ontario.

Ashley Roberts, Assistant General Superintendent of the China Grove Cotton Mills, China Grove, N. C., watches as Armstrong representative H. H. Jordan measures diameter of Accotex J-490 Cots in service on these frames. Frames are also equipped with Accotex NO-7876 Aprons.

Armstrong Accotex Cots and Aprons can help you keep yarn quality high

It takes the right combination of complex mechanical elements and human skills to turn out high quality yarn. Among the mechanical factors, the spinning cots and aprons are critically important!

Hundreds of mill men standardize on Armstrong Accotex products. These men know that the Accotex line contains a wide range of materials engineered to spin quality yarn on any drafting system . . . with any fiber or blend.

They also know that an important part of every transaction with Armstrong is the skilled, helpful service of their Armstrong representative. Armstrong Cork Company, Industrial Division, 6506 Ivy Street, Lancaster, Pa.

S. R. May, Jr., Vice-President and General Superintendent, looks over the Armstrong textile supply catalog with H. H. Jordan.

C. C. Morrow, Overseer of the No. 2 card room, examines comber web with Jordan. Accotex NO-728 Covers are on detaching rolls.

Gurney Norton, Overseer of the No. 3 card room, learns from Harold Jordan a quick way to check rolls for excessive wear.

Jordan chats with roll shop foreman W. A. Russell about the operation of an Armstrong Type "H" cot assembly machine.

Armstrong

ACCOTEX COTS AND APRONS

What's your slashing trouble?

Foaming?
Sticking?
Shedding?
Harsh warps?
Yarn rolling?

Name your own problem, then call the SEYCO man. Collect! He's looking for problems to work on.

Ever since 1904, when the men responsible for SEYCO Size started in business as the Atlanta Compound Company, our technical men have been building up the country's best reputations as trouble shooters.

Their reputations are well-earned.

Give us a try!

Warp Sizing: *Softeners, Binders, Penetrants, Ty-In Penetrants, Shuttle Dressing, Waxes.*

Wet Processing Chemicals and Auxiliaries: *Dye Assistants, Penetrants, Rewetting Agents, Sanforized Fabric Oils, Detergents, Scouring Agents, Softeners.*

Niagara Twist-Setter: *Yarn Conditioning Penetrants.*

Seyco Warp Lubricator.

Headquarters for textile chemicals

SEYDEL-WOOLLEY & CO.

748 RICE STREET, ATLANTA, GEORGIA

SEYCO

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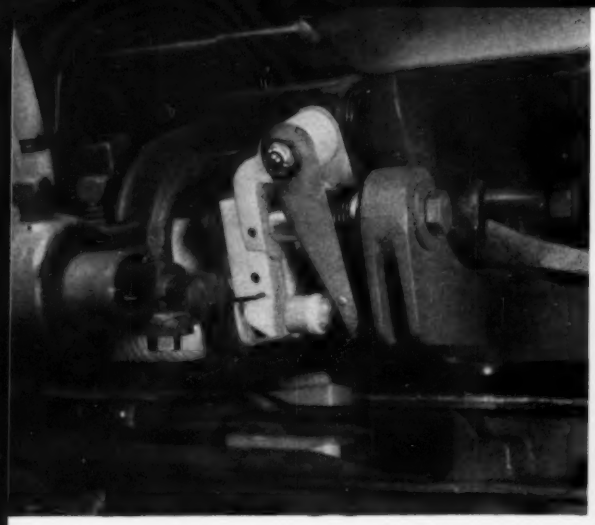
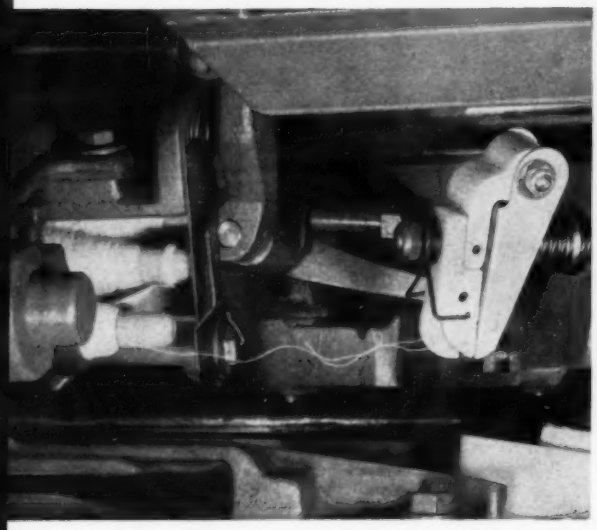
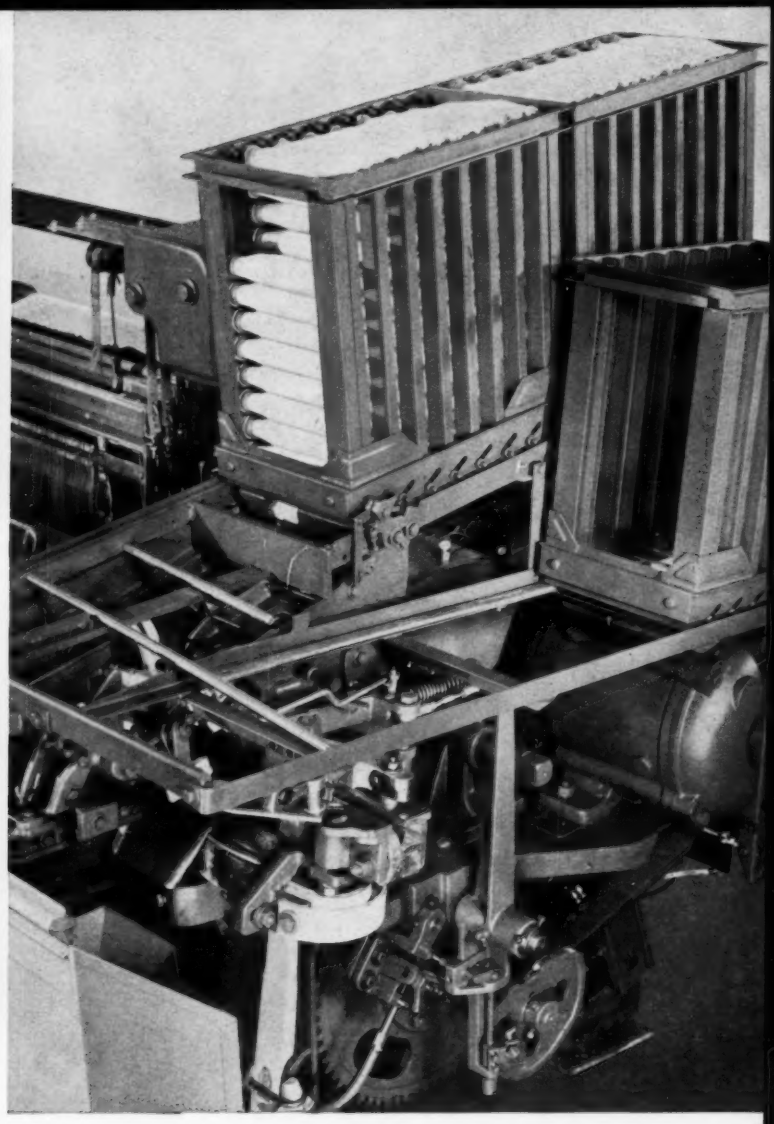


▲ EXTRACTOR HEAD ASSEMBLY MECHANICALLY
▼ EXTRACTS AND HOLDS THE TIP BUNCH.





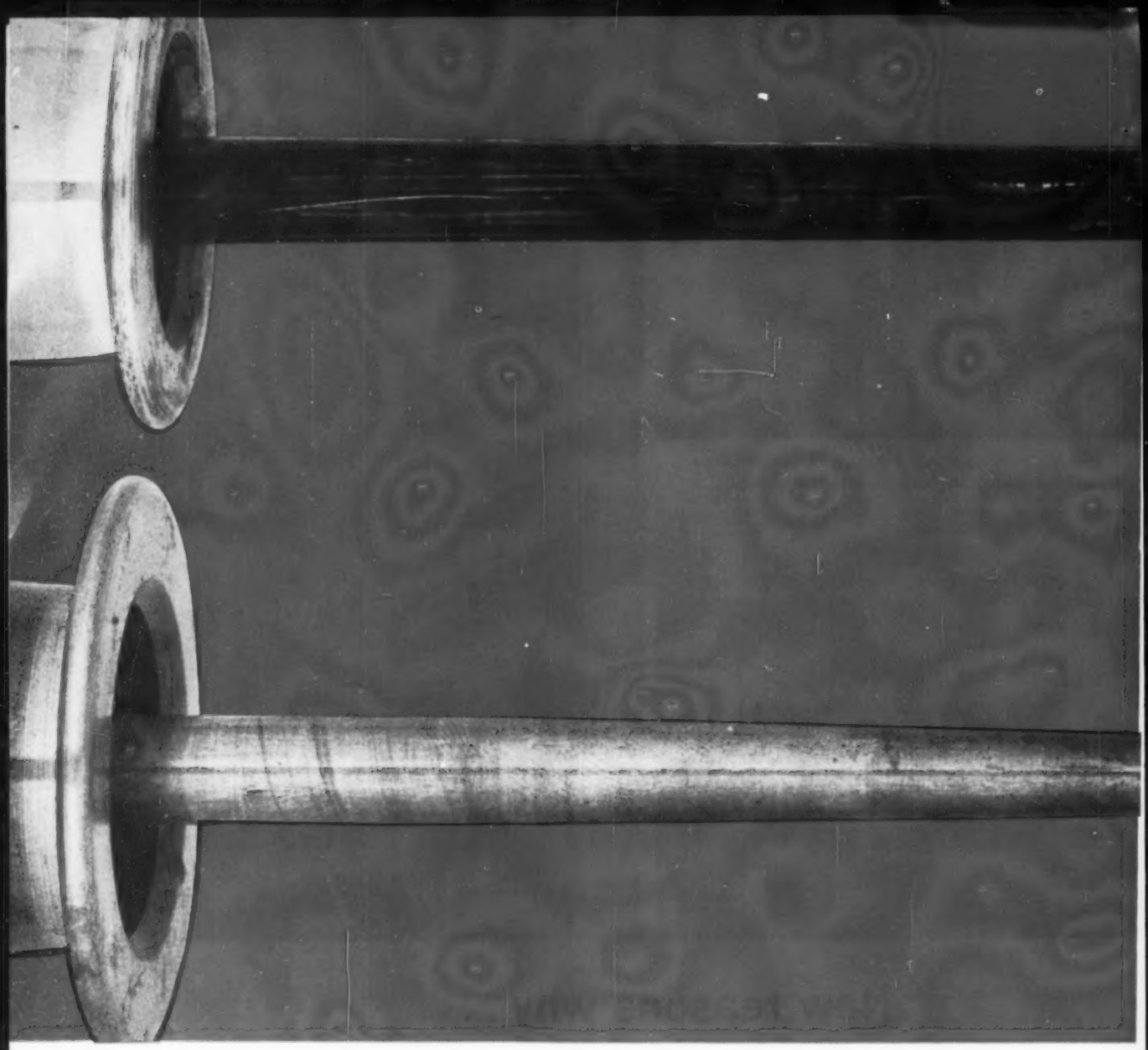
New reasons why . . .

the Draper Automatic Filling Magazine offers greater mill savings

The Draper Automatic Filling Magazine with a new cam operated pivoting extractor and mechanical thread clearer eliminates the need for a vacuum system to clear the thread and the tip bunch of the incoming bobbin after transfer. This new construction reduces mill installation time and cost . . . simplifies maintenance . . . and improves cloth quality. *Consult your Draper representative for details on this and other advantages of the Draper Automatic Filling Magazine.*

DRAPER CORPORATION

HOPEDALE, MASS. • ATLANTA, GA. • GREENSBORO, N. C. • SPARTANBURG, S. C.



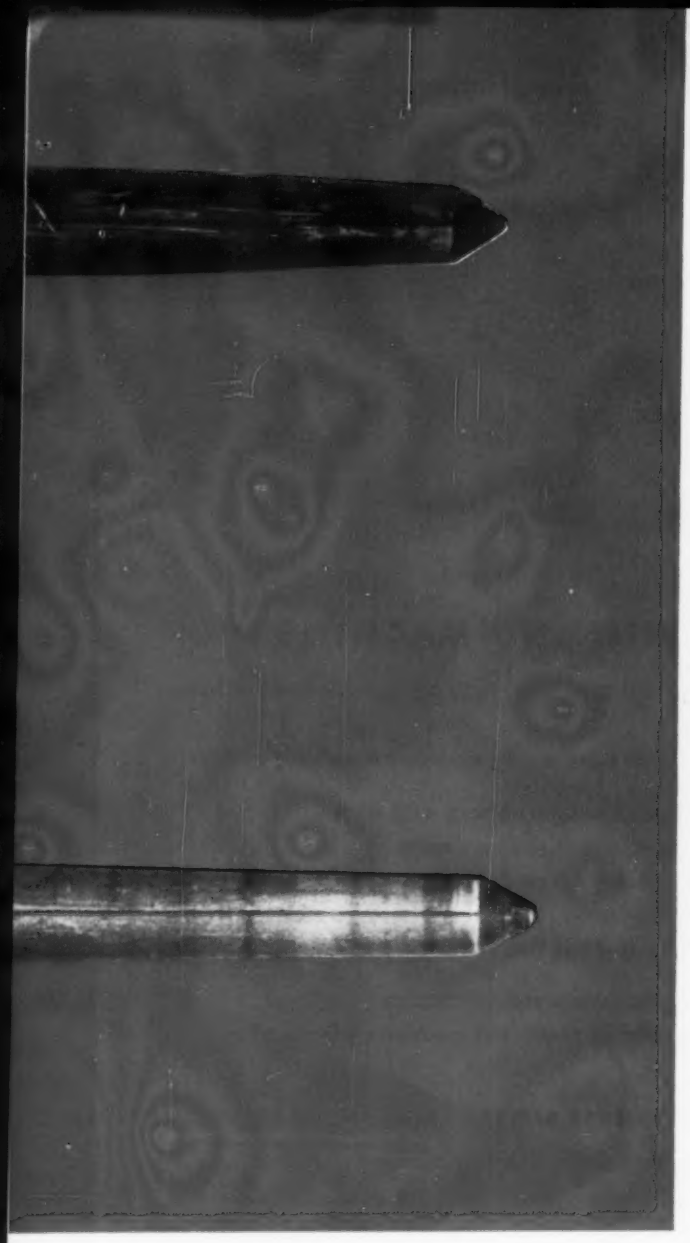
Comparison after seven years of service keeps spindles and bolsters cleaner . . .

Here is a dramatic close-up of two Whitin HM3 textile spindle blades and bolsters — all have been in service in the same mill for over seven years.

The top blade is heavily coated with deposits. And, the roller bearings in the bolster are clogged with sludge. Yet the spindle blade and bolster on the bottom look almost new. Why? Because this spindle was lubricated with Gulfspin oil.

You see, Gulfspin oil offers three-way cleaning action: (1) It is oxidation-stabilized to prevent deterioration in service, (2) it contains an effective detergent that keeps spindle parts free of harmful deposits, and (3) it is inhibited to protect against rust—most important in cast-iron bolsters where rust causes bolster wear and lube discoloration.

By keeping spindles and bolsters deposit-free, Gulfspin minimizes vibration and permits dampening devices to function normally. Here's another im-



shows that Gulfspin® oil
GULF MAKES THINGS RUN BETTER!

portant point: Gulfspin's oiliness characteristics resist enlargement of spindle clearances by reducing the rate of spindle wear.

With Gulfspin, you get smooth, trouble-free spindle operation. There's less vibration, fewer ends down, lower power and maintenance costs. Try Gulfspin soon and see for yourself how Gulf makes things run better! Just call your nearest Gulf office, or write for detailed pamphlet.

GULF OIL CORPORATION
Dept. DM, Gulf Building
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GULF

SPINNING MACHINERY

for cotton, staple and man-made fibres

Planning and supply of complete spinning plants

Blowing room machinery with central
full-automatic electric control
Revolving flat cards · Drawing frames
Speed frames · Ring spinning frames
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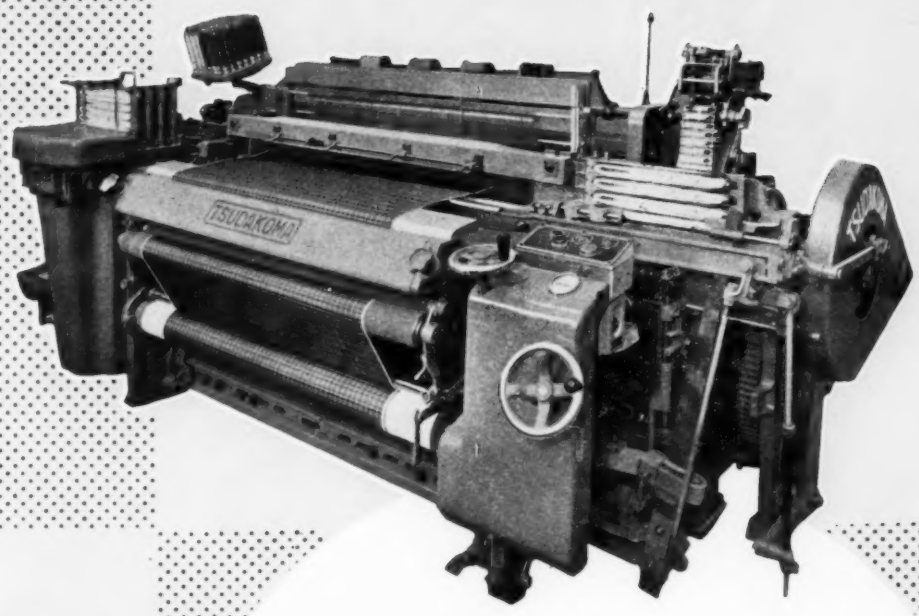
Tsudakoma



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Automatic Loom and Ordinary Loom
for silk, Rayon, Nylon and all Synthetic Yarns

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High Speed Bobbin Winder
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SHE KNOWS HOW TO HELP HER BETTER HALF LOOK HIS BEST

Make sure the tag says Arnel triacetate or Fortrel polyester! Shopping for herself and the children, she's learned that these tags are found only on fabrics which have met demanding quality-control standards. And she's learned through experience that these fibers keep clothes looking fresh as new with a bare minimum of care. So when she's buying clothes for her husband—or helping him buy them—she goes out of her way to find these dependable Celanese Fibers.

Arnel is soundly established in menswear—it's featured in many fine lines and backed by national advertising the year around. New Fortrel got off to a brilliant start this year—and plans are in the works for an all-out menswear campaign in '62. To capitalize on this acceptance, be sure to include fabrics with Arnel and Fortrel in *your* line! Celanese Fibers Company, 180 Madison Ave., N. Y. 16 (a division of Celanese Corporation of America).

Celanese® Arnel® Fortrel® is a trademark of Fiber Industries, Inc.

Celanese Contemporary Fibers

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OXYTROL Low B.O.D. STARCH

Water disposal problems are solved more economically when you use Staley's latest contribution to the textile industry—OXYTROL Low B.O.D. Starch. For this economical warp size has some 70% less B.O.D. (biochemical oxygen demand) than regular starches. Recommended for sizing a variety of yarns—mill trial runs show OXYTROL gives nearly twice the effective weaving protection of ordinary starch sizes.

Examine the many advantages of convenient, easy-to-use OXYTROL. Save up to 20¢ a pound on your low B.O.D. materials costs. See your Staley representative for further information, or write:

A. E. STALEY MFG. CO.
Decatur, Illinois

ATLANTA • BOSTON • CHICAGO • CLEVELAND • KANSAS CITY • NEW YORK • PHILADELPHIA • SAN FRANCISCO • ST. LOUIS

NOW *for the first time . . .*

a ring with effective distribution of either GREASE or OIL . . . .

Diamond Finish

"DUALUBE"

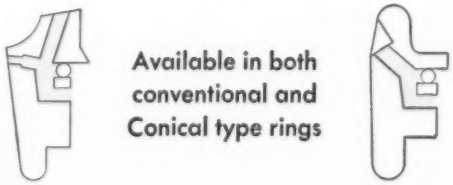
PATENT PENDING

Pressure-Lubricated Ring $\frac{43}{64}$" and up

"Dualube" conducts the lubricant 90° in each direction from the intake, and emits it at two points on opposite sides of the circumference. This is the first and only ring giving multiple distribution of both grease and oil with equal efficiency. Improved lubrication is assured, permitting . . .

HIGHER SPEEDS – LONGER TRAVELER LIFE!

Write or 'phone for details



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WHITINSVILLE (MASS.) SPINNING RING CO.

DIAMOND FINISH

Makers of Spinning and Twister Rings since 1873

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Textile Industries
JUNE 1961

Yarn quality off?

Compare your quality control procedure with that of these two Georgia Mills

Staff report

PRECISELY AT 9:30 a.m. on 22 April 1961 General Chairman *Lee Wynn* called the group to order, and the spring meeting (devoted to carding and spinning) of the Textile Operating Executives of Georgia got under way. The place: the auditorium of the Harrison Hightower building, A. French Textile School, Georgia Institute of Technology, Atlanta. A surprise awaited the mill men, for a full third of the meeting time was to be devoted to an "unscheduled" discussion of quality control practices in two Georgia mills—Swift Spinning Mills, Inc., Columbus, and Canton Cotton Mills, Canton. Canton is a denim mill, Swift is a yarn mill.

James Wheeler, spokesman for Canton, presented his full paper; *George Blumquist* of Swift followed him to the speaker's stand to present his. The balance of the time the two spent answering questions from the floor.

"How we maintain SALES YARN quality"

by George Blumquist
Swift Spinning Mills

Mr. Blumquist

Objectives. In any paper on quality control, I believe that it is best, first of all, to state the aims of the particular quality control department involved, its responsibilities and place within the organization it serves.

At Swift Spinning Mills, we have approximately forty-seven thousand spindles. We produce in the neighborhood of 14,000,000 pounds annually of grey knitting and weaving yarns—carded and combed, plied and single on an average count of approximately 16. At one time, we will be producing 35 to 40 different yarn numbers on counts ranging from 3s to 30s from twelve or more different rovings. We are a sales yarn

Continued on page 74

"How we maintain WEAVING YARN quality"

by James Wheeler
Canton Cotton Mills

Cotton. We have standard limits set up for the *fineness* of the cotton we use in our filling, and we take out of our filling mix any bales that do not meet our requirements. We use the fineness test as a direct improvement and control of our quality—tests have shown us that cottons falling below our fineness requirements make an inferior piece of cloth.

Using the Micronaire or, on occasion, the Speedar, we test every bale of filling cotton and spot check the warp on a ten-per-cent basis. We include fineness requirements in our contracts.

We spot check our incoming cotton for *tensile strength*,

Continued on page 75

Mr. Wheeler

Sales yarn

(from page 73)

mill and our products are shipped on cones, cheeses, tubes, beams, and ball warps.

Our quality control department is a service organization to our production department It is our responsibility to accurately, and without bias, report to the production manager, superintendent, and overseers the quality, not only of our finished yarn, but also of the stock being produced on the various processes within our organization.

Copies are made of all routine tests and distributed to the superintendent and overseers. It is their responsibility to correct any process which we find out of control and it is also one of our responsibilities to assist in this correction if needed.

The work we perform can be broken down into three categories: (1) routine testing; (2) special testing; and (3) production records.

Routine testing is performed on a regular schedule and will be the principal subject of this paper. Special testing includes troubleshooting, complaint handling, evaluating new machinery and changeovers, making special studies, etc.

We do handle some production records in our department and of course they will not be discussed since this paper pertains to quality.

Cotton. Since quality yarn cannot be made without quality cotton, we endeavor to assure ourselves that the raw stock we buy is at least equivalent to that which we have specified. In order to do this we test fineness of each side of every bale, test for fluorescence in every bale, and spot check behind our classers for grade, staple, color, and any characteristic which we feel might be detrimental to our end product. Our cotton is blended so that average fineness will not vary over 0.05 micrograms per inch, day to day, from the mean we have established for any particular mix.

In the following we will attempt to outline some of our testing procedures and the schedule we attempt to follow. At this point, I should say that we have never been able to fully live up to this schedule, but we are still trying.

Card Room. We test picker lap CV on each picker monthly, and occasionally weekly if necessary. We consider 1.17% cv as "A" quality, 1.18 to 1.35% as "B" quality, and higher as "C", "D", and "F" quality. Our tests are made on the Saco-Lowell lap tester.

We grade all evenness tests with the designation of "A", "B", "C", "D" or "F" from tables which we have established with regard to the stock being processed and the frame on which it is being made. We believe this is important in order for the reader of the report to judge how well a particular process is performing from the standpoint of the evenness factor.

As an example a particular stock might perform on frame "X" at an evenness level of 3.6% U* and be considered "A" quality while another stock performing at the same level of 3.6% U on the same frame might be designated "C" quality. These grades have been established from experience and represent what we believe to be an accurate evaluation of the evenness level at which any of our frames should operate on any given stock.

All of our short range evenness tests on cards through spinning are made on an I T G 16 Uster evenness tester. This tester is equipped with the mean linear integrator, Spectrograph, two recorders, and the imperfection counter. The Spectrograph is used to pin-point variations which occur periodically and which are caused by bad rolls, gears, etc. The imperfection counter is used to tabulate the thick and thin places and the number of neps in yarn.

In connection with the Spectrograph, we have made, into booklet form, tables which cover each frame in our mill and show in numerical order the length at which any defective part will "blip" on a Spectrogram. These tables have been placed in the overseer's hands and when he receives a Spectrogram which has "blipped" at any given length, he can, without calculation, very quickly determine which is the best place to look in order for the correction to be made on that particular frame.

Each card is scheduled for an evenness test once each six months. This schedule might seem to be too lax, however we rely on our supervision in the card room to detect and correct any serious unevenness at this point, since such is usually visible to the eye. Our tests on card sliver are made at 25 yards per minute, and an average per cent U is taken from three one-minute readings.

On breaker drawing we have six-delivery frames. The first three deliveries of each frame are checked one week and the last three deliveries are checked the next week. Thus each delivery is tested for evenness every two weeks. The tests are made at 25 yards per minute and an average on each delivery is taken from three one-minute readings.

Finisher drawing is tested for evenness on each delivery once each week. The testing speed and number of readings are the same as for breaker drawing and cards. Each comber delivery is checked for evenness twice each week in the same manner as cards and drawing.

Most of our roving frames have six deliveries on each stand. In this case, we test three deliveries on stand No. 1 the first week and the last three deliveries in stand No. 1 the following week. The next week we check the first three deliveries in stand No. 2 on each frame, etc., until we have tested all deliveries on each frame.

This means that in forty weeks we will have tested each delivery on all of our roving frames. The tests are made at 25 yards per minute and an average is taken from three one-minute readings on each delivery.

Spinning. Our evenness tests on spinning frames are based on our assumptions that:

(1) Most evenness problems stem from the front line of rolls;

(2) They occur more often at the deliveries adjacent to the roll

*Mean linear deviation on Uster integrator.

necks; and

(3) They may be present at one point along the front roll and not at other points.

For the above reasons we test all spindles adjacent to the roll stands. The first week, we test spindle No. 1 in stand No. 1 on the right side of the frame. The second week we test spindle No. 1 in stand No. 1 on the left side of the frame.

The third week we test spindle No. 1 in the second stand on the right side of the frame and continue alternating sides and moving down the frame from the head to the foot-end until all No. 1 spindles have been tested on each stand on every frame. In this manner, within forty weeks, we believe that we will have checked all of the points on every frame that are most likely to give trouble.

Our tests on spinning are made at 100 yards per minute and one one-minute reading is made on each bobbin. During each test we also use the imperfection counter to measure thick and thin places and neps in the yarn.

This covers our procedure for evenness tests, as only spot tests are made on finished yarn on cones, cheeses, and tubes.

Disposition of Findings. Of course, no test is worth making unless its results are properly circulated and recorded. A duplicate copy of each evenness test is given to the overseer and superintendent. If during the test it is discovered that any delivery is not performing satisfactorily, two Spectrograms are made during the test and distributed to each party.

We maintain records on all tests on each delivery on each frame. As an example, on finisher drawing, we record the per cent U on each delivery of each frame and the average evenness of all of the deliveries on that frame each week. Also the grade is plotted on a curve so that we may, at any time, very quickly check the evenness history of any frame in the mill.

A composite report is given to the superintendent each week. It contains the average evenness with highs and lows on each stock on each process including the evenness on each basic type of frame.

With regard to the longer range variations, the overseer of carding is responsible for controlling size from pickers through the last process of drawing. Finisher drawing sliver weights are made and recorded twice each shift. If a drawing frame is found to be outside of the standard limits, it is rechecked and if confirmed, the proper correction is made in the crown gear.

The laboratory is responsible for sizing roving, bobbin yarn, and finished yarn. Each count of roving and yarn is sized daily. We size six bobbins of roving on each count and on spinning we size and skein break eight bobbins of yarn on each number. We record the daily size and breaks along with the average range on spinning yarn numbers. Of course we also size and break twister yarn daily and test for ply turns per inch.

Each week we make and circulate a yarn report covering the pounds produced of each number, its average size and break on bobbins and cones, together with the standard at which level each yarn should break.

Unfortunately, the above does not, by any means, cover all of the factors which go to make up yarn quality. There are such things as slubs, heavy and fine ends that are also important and many other factors which make our customers either happy or dissatisfied.

In the end, he is the one whom we are controlling quality for, and certainly every approach should be used to determine the characteristics he wants in a yarn. Control those characteristics in any fashion you desire, but produce the quality he wants and you have a successful quality control program.

Swift sizes its spinning yarns by progressing along entire frame in selecting specimens

Weaving yarn *(from page 73)*

checking approximately five per cent of it. Using the Pressley and Stelometer for our tests, and using both the zero gauge and the ⅛" gauge, we quote our results in thousands of pounds per square inch. We are now compiling tables on strength in grams per tex.

We desire our cotton to be average or better in tensile strength, and we use the standard limits as a base. We do not have this spelled out in our contracts, but if we run into any weak cotton we work back with the shipper and the area that he obtained the cotton from. Fortunately, most of our cotton meets our standards for strength. And of course this is partially controlled by the fineness requirements we do have in our contracts.

We have our *maturity* standards set up, and from these we judge if the bale is mature enough for us. For several years we tested all our filling cotton for both fineness and maturity and we rejected on both.

At that time, it took both these tests to keep the neps in the cloth under control. Rather recently we have made processing improvements that have reduced our neps.

We use the Goldthwait dye differential test, dyeing fifty samples at a time. We do this periodically on our incoming cotton, but in the past we checked 100 per cent of our filling cotton for maturity.

For the past eight years we have made periodic tests for *cavitoma*. We still do, and for several months we have been checking 100 per cent of one of our mixes for it. The symptoms occur more frequently some seasons than in others, and in the bad seasons we resort to the 100-per-cent checks.

We use an indicator solution that gives us an idea of the alkalinity of the cotton. And we set the affected cotton into our mixes in a ratio we know to be safe.

We make the *modulus* test for

Canton is preparing to study the correlation between single-strand and skein breaks

research and for checking "suspicious" cotton. As we test for fineness, we particularly watch for cottons that feel soft, and these we give a modulus check. The Speedar indicates the cotton's resistance to compression.

The modulus is valuable to us in that it will warn us if a cotton is likely to pack tightly and resist dye penetration during raw stock dyeing. We do not get much stock, fortunately, that meets our fineness requirements and still fails the modulus test.

On our Shirley analyzer we periodically separate the *foreign matter* from the fiber. We check these amounts against the Government standards (box standards) for the appropriate cotton grade.

Until now we have run periodic arrays, using the Suter precision tester, to test the per cent *short fibers* in our cotton. Just recently we purchased a digital Fibrograph.

We are now accumulating fiber data that eventually will allow us to work backward through our shipper to get cottons with the lowest per cent short fibers possible. It is our opinion that raw materials must be under definite control if yarn and cloth quality are to be guarded.

Card Room. We have set up our own standards for *lap coefficient of variation*, so as soon as the calculation is made we know whether the lap is excellent, good, fair, or poor. We make regular checks, from the laboratory, covering each picker every two weeks, testing laps on a Saco-Lowell lap meter. We make these tests in addition to those we make in helping the picker room personnel keep the pickers under control.

We thus make our lap tests for the two-fold purpose of keeping our lap uniformity under control and for supplying management with a record of the type laps we are producing. We have been looking at a Varimeter, and if time permits I should like to get some remarks from the floor on the results obtained from checking laps on this instrument.

We make periodic checks, on the Brabender, to see if we are running within our desired range of *moisture content*. Sometimes we have raw-stock-dyed cotton that carries too much moisture (we also check our raw cotton periodically), and sometimes we have laps without enough moisture.

Periodically we process laps on the Shirley analyzer to determine the *foreign matter* present. On occasions we have checked the foreign matter in an opening of cotton and also in laps to see if we are removing, up to that point, with our number of beaters, speeds, etc., the amount of waste we should.

In making beater checks, we anchor large sheets of paper under the beater sections to collect the waste. We run three laps and weigh the waste. This we check by running the beater waste through the Shirley analyzer to determine the ratio of fiber to waste material present. We make beater adjustments accordingly.

Based on each 100 pounds of cotton put through, we allow a standard 75 per cent waste and 25 per cent fiber in picker waste.

In the department, and every two months, we make an *evenness* test from each card in both our mills, using the Uster evenness tester and making a Spectrogram on each of the tests. Over a long period of time, we have evolved our own standards.

Whenever we find a card operating outside our quality limits, we get the fixer onto the cause right then. We recheck his work before we move to the next card.

Neps are always a problem on denim, but over the years we have made changes in our processing procedures that have brought our neps to a minimum. Thus we check neps only periodically. Using boards, from each card we check ten square inches of web from each selvage and from the center. We enter the count from these thirty square inches in red on our report. Then we correct the condition and recheck it. We calculate and report neps per hundred square inches of web.

We make quarterly tests of our *sliver can weights* by weighing a representative number of cans. Since all our costs, job loads, etc., are dependent upon standard package weights, we make every effort to keep these up to the correct figure.

In the mill daily we make *sliver weighings*, and periodically we make such sizings from the laboratory. We reel off five yards of sliver, weigh it, and record the amount in grains.

As a check on our cleaning efficiency, we periodically run card sliver through our Shirley analyzer to obtain *sliver foreign matter*. We make other checks at the card from time to time, checks not mentioned in this report.

Probably we have done more *evenness* testing at the drawing than at any other stage of processing. At the moment we are checking each drawing delivery once every two months—we have checked it weekly and bi-weekly. We conduct the tests on the Uster and with the Spectrograph, evaluate the results against the standards we have set, correct any deliveries falling short, and later make a follow-up test.

We feel we can get more from our testing dollar by sampling our drawing sliver to determine *tensile strength and fiber fineness* than we can by sampling 100 bales in the opening room. Thus twice weekly, in both mills, we sample warp and filling sliver for those quantities. We hope to add to these two tests the percentages of short fibers and the staple length as determined by the digital Fibrograph.

Each quarter we check the pounds per can and the speeds against our standards.

Frequently we use the Uster equipment, including the Spectrograph, to check our roving evenness. We have had various schedules for this work, but at present we are checking two bobbins, one from the front line and one from the back line, on each frame in each mill each two months. We compare the results with our

standards, check into any frames falling outside our limits, and make follow-up checks after the corrective action.

Since our job loads are based on package weights, we are ever striving to get as much roving on our bobbins as possible and as close to our standards as we can. We have been checking *roving package weights* every two or three weeks, checking all frames in both mills in a concerted effort to keep our package size up to standard. In addition to the daily sizings in the card room, we size roving and check frame speeds regularly.

Spinning. Using our Uster equipment, we check six bobbins from each frame, both warp and filling, in both mills every two months. We have tried other testing schedules, but this is used at present.

These periodic tests we evaluate against the standard we have set up for our various yarn numbers. Any frames that are out of these standards are corrected by the fixer. We follow his actions with an additional test.

We find that periodically checking a *conditioned break* on our various yarn numbers against our break factor standards is a good way of keeping our finger on the mill "pulse." We prefer to keep well within our standard break, so we make special tests from time to time, checking various cottons, machinery, processing, changes, etc., always in an attempt to improve our break factor. We also make daily size and break tests in the spinning room, and we make frequent tests on the various cotton mixes, etc., going through.

Once each quarter we check *package size* and frame speed in both mills. Again, since our costs are based on package weights, we are always on the alert to keep the weights up to standard.

We are using our Uster single strand breaking machine extensively, accumulating data on various yarn numbers, cotton mixes, etc., checking the sizing, standard breaks in grams, frequency distribution of the breaks, the per cent elongation, and the coefficient of variation. Most of the work has been on special projects and research, and we continue to build up data for use in correlating evenness against strength.

Summary. We consider quality control as a service department in that we have the machines and methods available to measure the quality at the various stages of processing in our mills. We pass our findings back to the superintendents, overseers, shift foremen, and fixers. Thus the actual control of the quality is dependent upon the corrective measures taken by the supervisors such as each of you. In our mills we get the best of cooperation, and it is this attitude that has helped us in making a top-quality denim fabric.

Discussion on Canton's and Swift's quality control procedures

After Mr. Wheeler and Mr. Blumquist had given their papers, both assumed standing positions on opposite sides of the auditorium, where they remained throughout the question period.

"Where do you control your weights?"

"You mean fabric weights?"

"No. Yarn counts?"

While the question was asked of Mr. Wheeler, Mr. Wynn, superintendent of Canton Mill No. 1, supplied the answer, "In spinning."

Said Mr. Blumquist, "At the finisher drawing."

"How often do you check your drawing with the Spectrograph?"

"Every two months."—Wheeler

"How many deliveries do you find out of limits?"

"About 25 per cent. We set our standards on this by examining our experience for years, and what we arrived at as limits are realistic, nor arbitrary ones."—Wheeler

"Do you find a correlation between single-strand breaks on the Uster and skein breaks?"

"We hope to, but we haven't had the single-strand equipment long enough for an evaluation."—Wheeler

"What tests do you make for cavitoma?"

"We apply an indicator stain."—Wheeler

"What does it measure?"

"Cotton pH."—Wheeler

"Is it effective?"

"It is not infallible, because it only changes color in the presence of pH values that could accommodate cavitoma. Fortunately, we don't find much of it, so we never have to resort to our "cavitomic" blend. But we always blend the stained bales in harmless quantities."—Wheeler

"Why do you test fiber from your drawing sliver to determine its fineness and strength? How fast do you run your drawing, anyway?"

"We consider drawing sliver as representing an optimum blend, the fiber arrangement we are going to be using from there on out. Our drawing runs at 400 feet per minute."—Wheeler

"Do you find the Spectrograph of any particular value?"

"Definitely. And of great value. Recently we looked for four days for the cause of a fault in our operations. We didn't find it until we used the Spectrograph, and it gave us the answer immediately."—Blumquist

"How do you go about selecting the spinning bobbins you size?"

"We test a given number of bobbins per day from a frame. The next time we test another group from that frame. We continue this way until we have tested all the spindles on that frame."—Blumquist

(Look for the balance of the discussions on carding and spinning next month.—The Editors)

Picker room at new Telares de Palo Grande mill in Venezuela.

Combers in new mill came from Saco-Lowell Shops and Ingolstadt.

No More Siestas

Mills South of the Border are getting up-to-date; this new South American plant may be an omen of more competition ahead for the U.S. textile industry

by Victor Saxl
Textile Consultant
Exclusive

THE MOST modern fully integrated cotton mill South of the Border started full-scale operations this year. Telares de Palo Grande C.A., Caricuao, Venezuela, represents an investment of some $10 million.

Palo Grande is not a newly established manufacturer—it has been operating a mill in Caracas for 41 years. To build this new plant it merged with Telares de Caracas, C.A., manufacturers of print cloth.

Since streamlining of operations, modernization, and further expansion was impossible at the old location, and since the management headed by company president Henrique Blohm firmly believes in a sound development of the Venezuelan textile industry, it decided to build a new, substantially larger plant at Caricuao, a picturesque village about 10 miles west of Caracas.

Part of the equipment from the Caracas plant — the up-to-date part — was transferred to the new mill. But new machinery, the greater part of Palo Grande's equipment, was purchased from U.S. and European manufacturers; it was carefully selected to suit the production program and existing labor condition. The technical personnel made trips abroad to visit textile machinery exhibitions, machinery builders, and cotton mills before the purchasing decisions were made.

The new mill at Caricuao lies more than 3120 ft above sea level and it is interesting to note that the buildings were constructed on a plateau 210 ft above the highway as safeguard against seasonal floods. Even though some 13 million cu ft of earth had to be moved at high cost, management feels that the efforts and the outlay were well worth it. And where people used to see a barren hill, there now stands this modern plant.

The reasons for building it in Caricuao were many: the proximity to the capital, Caracas, where the majority of the customers are located; sufficient trained labor; a good climate; and above all, a sufficient water supply.

The mill building covers nearly 41,000 sq yd, of which about 4,800 sq yd are for auxiliary services, workshops, and a large water treatment installation.

The mill has some 22,000 spindles and 400 looms, as well as a complete finishing plant for the main lines of fabrics—drills, twills, sheetings, shirtings, and printcloth. Besides a certain quantity of sales yarn for the knitting industry, it is expected to produce about 14 million yd of piece goods annually. The mill employs some 900 workers.

The building was designed by Lockwood Greene Engineers, Inc. It is a one-story building, a steel

TOP: Bird's-eye view of new plant, Telares de Palo Grande, near Caracas, Venezuela.

CENTER: Some of the 12" X 7" Ingolstadt roving frames equipped with Pneumastop.

BOTTOM: The author (left) and mill president Henrique Blohm in spinning room.

structure with roof made of precast porous concrete slabs topped with cork insulation. The floor is made of Kalman-type concrete.

The mill is completely air-conditioned; a central system evaporative cooling installation was made by Bahnson Co.

Water Treatment Plant. Palo Grande gets its water from two deep wells (200 ft) situated ¾ of a mile away in the valley of the Rio Guaire. There is enough water all year 'round, but it contains considerable sand and iron residues. Because of these impurities and the distance from the plant, an intricate water control and treating plant had to be erected.

Next to the wells in the valley

New equipment at the mill includes these Schlafhorst Autocopsers.

Sucker slasher from Germany has tension and humidity controls.

a pumphouse was built containing three pumps, two of which are in operation, with a third in reserve. Their operation is controlled by the level of a 100,000-gal raw-water tank next to the mill. From this tank the water flows through a funnel-shaped concrete clarifier, which differs from those used in the United States in that it has no moving parts to wear out and is practically free of maintenance. DEFAG of Duesseldorf, Germany, delivered the water treating plant and designed the clarifiers.

Three sand filters and four zeolite softeners, an automatic chlorinator, and a fully automatic pH-control system complete the treatment of water used for industrial and sanitary water.

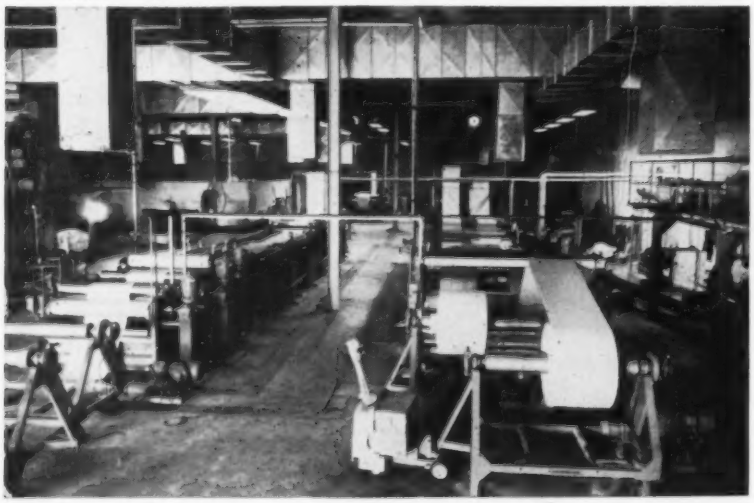
All controls of the water treatment plant are centralized on one board in the control room; on this the levels of all the tanks, the degree of the hardness of the water, the incoming water flow, the water consumption, the operation of the pumps in the valley, as well as the time for cleaning of filters and recharging of softeners can be checked.

Opening Through Slashing. Palo Grande's opening and cleaning line includes four rows of pickers delivered by Saco-Lowell Shops and Ingolstadt (Germany) with automatic ejectors.

In the card room there are 150 cards with 18″ x 42″ cans and automatic vacuum stripping, some built by Saco-Lowell Shops and the rest by Platt Brothers (England) and Ingolstadt.

The drawing frames are from Ingolstadt with 18″ x 42″ cans and a 3-over-4 drafting system. There are six Saco-Lowell and six Ingolstadt combers. The Ingolstadt roving frames are 12 x 7 and are equipped with Pneumastop.

Finishing plant includes two chainless mercerizing ranges from Kleinewefers of Germany.



In the spinning room there are 60 ring spinning frames, 20 built by Saco-Lowell with 312 - 324 spindles, and the rest by Ingolstadt with 380 - 400 spindles. The frames are 3″ and 3½″ gauge with 2″ and 2½″ rings, are equipped with suction cleaners and overhead cleaners as well as with open air creels. The average yarn count spun is 22s.

The firm has Abbott and Schlafhorst BKN cone winders.

In the warping department there are both Reiner and Schlafhorst warpers. The latter are operating at speed of up to 650 yd/min and are designed to produce hard beams as well as soft beams for dyeing.

Palo Grande has acquired a new Sucker PTC slasher, which is the newest type of air dryer slasher built in Europe. It has a set of drawing-in rollers placed before the size box which draw in the warp in such a way that it runs tensionless through the sizing bath. The double size box has two sets of rubber squeeze rolls; once set for a sizing run, the pressure is automatically adjusted with the speed of the slasher by automatic controls. In the three-compartment dryer, which has automatic controls to close steam and open air outlets when the slasher is stopped, in order to avoid overdrying, the yarn is carried by horizontal currents of air and steam mixture.

Mount Hope's electronic "Textometer" device regulates the speed of the slasher automatically so as to maintain the desired moisture content in the warp. On this slasher Palo Grande runs its

Picanol looms in foreground of weave room are for wide sheeting.

Testing laboratory has all necessary up-to-the-minute equipment.

warps for shirtings and sheetings at speeds of up to 100 yd/min.

The Schlafhorst quillers drop the quills automatically into boxes. 24 of these boxes are loaded on a specially designed truck which transports them directly to the looms, which have a support to accommodate them. The winding speed is 10,500 rpm.

Weave Room. Here the mill has an acoustical ceiling and lamps are flush with the false ceiling.

The looms show a wide variety of types and makes. There are Draper X-2's, XL's, and XP's, and Crompton and Knowles C4 and C6 looms. The President-type Picañol looms, built in Belgium, operate at speeds up to 210 ppm. There are also German Markwardt looms for towels and wide Picañol looms for sheetings. All these are needed to produce the necessary variety of piece goods for the small but very exacting market.

A Terrell quill stripper removes the reserve and yarn remnants from quills.

Dyeing and Finishing. Among the new and most interesting equipment installed in these departments is the following:

Two vertical shears from Monforts and two gas singeing machines from Osthoff, both German firms.

A continuous open-width bleaching range, built by Kleinewefers in Germany, operating at speeds up to 60 ypm.

A continuous open-width pad steam dyeing machine with padder, hot-flue (also used for resin curing), vaporizer, washer, and Kusters pressure roller.

Two mercerizers, chainless types, built by Kleinewefers.

One roller printing machine with vaporizer, built by Lang Bridge of England.

One package dyeing machine for cones and beams, pressure type, built by Thies (Germany).

One Monforts tenter frame for narrow and wide fabrics.

Two Kleinewefers calenders and one rubber-belt compressive shrinking machine built by Monforts.

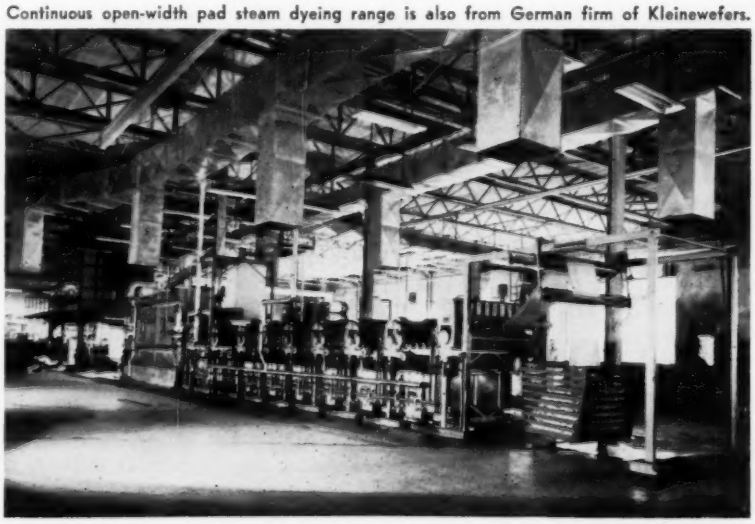
Laboratory. Palo Grande installed a generously equipped testing lab which includes the following: Uster evenness and strength testers, Micronaire, Pressley fiber strength tester, abrasion tester, wrinkle-resistance tester, and others, as well as a small laboratory-model continuous dyeing range which is proving of great value in testing dyeing recipes and is proving invaluable for matching colors.

In order to facilitate quality control in the spinning department a second Uster evenness tester was placed there.

It is noteworthy that Palo Grande has installed automatic scales in almost all departments so that the correct weights can be punched on special punch cards. Thus exact weight records can be kept at all times.

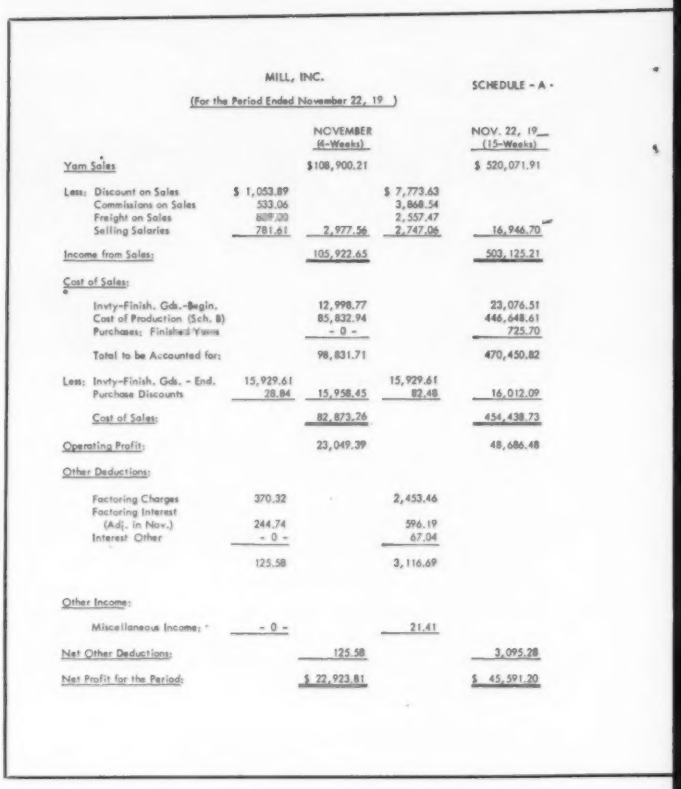
By careful quality control of raw materials, materials in process, and finished products, Palo Grande has established an excellent reputation for its fabrics throughout Venezuela. With the help of their new machinery they plan to maintain their quality standards for their enlarged output and also the new lines—such as shirtings and print cloth—they have started to manufacture.

Continuous open-width pad steam dyeing range is also from German firm of Kleinewefers.



Financial statements made simple

Ways to avoid some of the headaches of preparing monthly statements



MILL, INC.

(For the Period Ended November 22, 19)

SCHEDULE - A -

		NOVEMBER (4-Weeks)		NOV. 22, 19 (15-Weeks)
Yarn Sales		$108,900.21		$ 520,071.91
Less: Discount on Sales	$ 1,053.89		$ 7,773.63	
Commissions on Sales	533.06		3,868.54	
Freight on Sales	829.00		2,557.47	
Selling Salaries	781.61	2,977.56	2,747.06	16,946.70
Income from Sales:		105,922.65		503,125.21
Cost of Sales:				
Invty-Finish. Gds.-Begin.		12,998.77		23,076.51
Cost of Production (Sch. B)		85,832.94		446,648.61
Purchases: Finished Yarns		- 0 -		725.70
Total to be Accounted for:		98,831.71		470,450.82
Less: Invty-Finish. Gds. - End.	15,929.61		15,929.61	
Purchase Discounts	28.84	15,958.45	82.48	16,012.09
Cost of Sales:		82,873.26		454,438.73
Operating Profit:		23,049.39		48,686.48
Other Deductions:				
Factoring Charges	370.32		2,453.46	
Factoring Interest (Adj. in Nov.)	244.74		596.19	
Interest Other	- 0 -		67.04	
	125.58		3,116.69	
Other Income:				
Miscellaneous Income:	- 0 -		21.41	
Net Other Deductions:		125.58		3,095.28
Net Profit for the Period:		$ 22,923.81		$ 45,591.20

by Fred H. Drewes
Exclusive

THE PREPARATION of the financial statements of both large and small textile mill businesses has become a major business activity. In fact, many an accountant, controller, or other textile executive entrusted with the responsibility of this work must feel himself a derelict on a veritable ocean of business figures.

Not only has this all-important phase of textile office work become a major activity in summarizing the operations of the business, but its balloon-like expansion has found too many individuals unprepared to understand the results.

To the mill executive, sales manager, and other nonaccounting employees there is something both dismaying and repugnant about a large columnar sheet filled with statistics. "What do these figures mean?" is the invariable question of such a man. Seldom is he given a satisfactory answer.

Science of Statistics. There is a science that has developed methods for interpreting numerical data —the science of statistics. And in the preparation of the financial statement, this science, as applied, represents a progressive and orderly arrangement of self-explained captions and figures, all applying to the current period being reported upon and offering a comparison of the gross operations for the fiscal or calendar year to date.

And, finally, there is the thoroughly practical filing of balance sheets and profit and loss statements by months, thus forming an historical record.

It is, therefore, the purpose of this article to point out ways and means of preparing and presenting the financial statements, especially the profit and loss statements—to simplify and expedite the work, to offer comparisons in an understandable manner. In this manner, the fullest use of the report is available for action and decision earlier in the new or current period than perhaps were heretofore experienced.

Through the use of the following plan it has become possible in one group of mills to cut down the time of preparing the profit and loss statements of six individual mills from four hours to 1½ hours, each arriving at the consolidated balance sheet and profit and loss statement in approximately two working days.

Procedure. To enable the corporation to produce these results, a uniform "chart of accounts" was set up and the arrangement in each of the six ledgers was made identical and indexed and arranged as to assets, liabilities, income and expense accounts, etc.

Then, following the postings of the final entries for the period or month, including the postings of the standard journal and general journal entries, the accounts are footed, balanced, and an adding machine trial balance tape is prepared. Each of the five mills carries a total of 100 ledger sheets or accounts. The sixth mill, in which is recorded all of the general administration and selling expense controls for the division, carries

SCHEDULE - B -

MILL, INC.

COST OF PRODUCTION

November 22, 19__

	NOVEMBER (4-Weeks)	NOVEMBER (15-Weeks)
NET COST OF MATERIALS USED:		
Inventory - Raw Materials - Begin.	$ 48,167.08	$ 34,093.69
Purchases: Staple	66,674.38	329,465.77
	114,841.46	363,559.46
Less Inventory - Raw Materials - End	55,334.19	55,334.19
Cost of Material Opened:	59,507.27	308,225.27
Cost of Production:		
Cost of Material Opened	59,507.27	308,225.27
Less: Waste Produced & Value	473.69	2,377.78
Net Cost of Material:	59,033.58	305,847.49
Add: Direct & Indirect Labor	23,555.42	90,564.12
Mill Supervisory Salaries	673.08	2,524.05
Mill Overhead Expenses (Sch. C)	14,847.70	48,920.87
Total Cost of Yarn & Expenses:	98,109.78	447,856.53
Add: Invty.-Work-In-Process - Beg.	34,671.51	45,740.43
Total to be Accounted for:	132,781.29	493,596.96
Less: Invty. Work-In-Process - End.	46,948.35	46,948.35
Cost of Production:	$ 85,832.94	$ 446,648.61
Waste Produced & Value:		
Inventory - Waste - Beg.	122.70	626.18
Inventory - Waste - End.	596.39	596.39
Increase in Inventory	473.69	29.79-
Sale of Waste	- 0 -	2,407.57
Waste Produced & Value:	473.69	2,377.78

SCHEDULE - C

MILL, INC. - MILL OVERHEAD EXPENSES

November 22, 19__

ACCOUNT NUMBER	ACCOUNT NAME	NOVEMBER (4-Weeks)	NOVEMBER (15-Weeks)
0107	Maintenance & Repair Labor	$ 1,109.49	$ 4,264.71
0205	Clerical Salaries - Office	615.85	2,415.37
0231	Property Taxes	238.87	1,036.71
0251-52	Insurance	53.05	176.92
0310	Vacation Expense	315.00	1,181.25
0324	Ship. Supplies & Expense (Usage)	832.35	7,051.87
0325	Office Supplies & Expense	108.23	324.77
0326-30	Factory Supplies & Expense	1,699.99	3,209.21
0331	Power & Lights	2,300.34	6,726.07
0243	Water	1.94	51.95
0332	Fuel (Coal) Usage	95.00	190.00
0340	Repair Maintenance - Buildings	- 0 -	35.86
0341	Repair Maint. - Mchy. & Equipt.	1,606.50	5,086.87
0350	Payroll Taxes	198.26	4,974.91
0351	Workman'sCompensation	237.55	905.88
0352	Employee's Group Ins.	102.05	- 0 -
0360	Freight In	56.23	168.32
0361	Postage	41.50	98.54
0370	Travel Expense	98.73	541.53
0371	Miscellaneous	16.34	84.29
0380	Telephone & Telegraph	80.85	287.12
0400	Distribution of No. 2 Plant Expenses	5,039.58	10,108.72
	TOTAL MILL OVERHEAD EXPENSE:	$ 14,847.70	$ 48,920.87

approximately 200 ledger sheets or accounts.

The uniform handling of accounts and detail involved usually requires two days to balance out by one accountant. When distributed between two accountants, the work requires one day for each with one person handling the larger ledger and the other the remaining five ledgers. When two are involved, a portion of the second day is consumed with a "take-off" of the ledgers onto a trial balance report. The balances for this report are shown in each account in a column on the trial balance report which is headed up for an entire year's postings on continuation sheets.

The totals of each page of the trial balance for each mill is proved progressively as the page is completed and recapped onto the last sheet. And since the profit and loss items are posted on separate pages from assets and liabilities, a "quickie" or take-off can be made at this point as to the ultimate profit or loss at mill level for the period and the over-all year to date. However, there still remains the detail of preparing the income and expense or profit and loss statements.

At this point it may be well to stress the one factor which has delayed so many textile mills in completing their financial statements—inventories. When priced, extended, and checked, these figures bear an important role in determining the cost of sales for the period. This applies to those mills which continue to take monthly or 4-week period physical inventories of raw materials, work-in-process, finished goods, shipping supplies, dyes and chemicals, fuel and waste materials.

Bulletin Prepares Scene. A bulletin is prepared in advance of each "Inventory Taking." Following are some excerpts from it:

Subject: INVENTORY

Our next inventory will be taken on — blank date — beginning at — blank time.

The administrative department of — blank mill — will check the inventory count.

The following are essential for this inventory:

1. Housekeeping should begin at once. Straighten up all goods, making certain each item is in its proper location.

2. All goods belonging to one department but located in another department must be counted by the department in which goods are located.

3. Each area within a department should be marked by consecutive numbers and lined off. The area number must be written on the inventory form so the checker may prove the count rapidly and accurately. The person making the physical count should initial each area.

4. Each person responsible for a department must remain in his department until released by the checker. No area will be considered complete until the checker has placed his initials beside those of the counter.

5. Our warehouses contain goods which belong to other plants of the division. These goods must be counted. Indicate at the top of each page to whom the goods belong. Use a separate sheet for goods belonging to different plants.

6. The department name must be written in on each page. The name

or initials of the counter should also be noted in the space provided on each page. . . . Each department head should look over every page for obvious errors and initial each page.

There are additional instructions. Then there follows a complete listing of all persons directly and fully responsible for correct inventory count in departments as indicated. Following this listing is a complete list of persons and departments who are to check same.

The use of this memo pinpoints all of the departments and individuals concerned with inventory taking. Upon completion of the inventory the sheets (which were prenumbered) are referred to the cost section which prices the inventories, makes the extensions, and summarizes same.

Additional help is provided in overtime to expedite this work in time for the accounting department to incorporate the figures in their work in connection with financial statements.

Excludes Accounting Machinery. The plan outlined does not affect textile mills which utilize accounting machine equipment. However, it is felt that while this mechanical method is still in the minority, users of the manual system will be interested in how one group of mills functions with respect to these "chores."

In preparation for the taking off of financial statements, a stencil is prepared, on which is skeletonized the accounts to be reported upon, for each sheet of the report. These stencils are run off on columnar sheets.

The information is copied onto the sheets from the trial balance in pencil (a soft #2 pencil is preferred).

The financial statement presented with this article has been typed from the work sheets for purposes of condensing them. It covers the activity and reporting of one of the smaller mills no longer in the division, so the figures shown bear no relationship (except as an exhibit) to the reports of the division.

The financial statement is prepared in reverse, that is to say, the mill overhead expenses, *Schedule C*, is taken off first both as regards the "4-week period" and the "over-all year to date."

Then follow in order: "general administrative expenses" (not reproduced) incorporated as the last item in mill overhead expenses; "cost of production," *Schedule B;* then "cost of sales," *Schedule A,* arriving at "operating profit" and "net profit" also incorporated in *Schedule A.*

The reason for so handling is to dispose of the detail of so many posted and proved expense accounts first while possibly awaiting completed inventory figures.

A follow-through on the three schedules will indicate that "mill overhead expenses" is posted and incorporated into "cost of production," *Schedule B.* Likewise, "cost of production," *Schedule B,* has been brought forward to *Schedule A* and is used to reduce sales and cost of sales to operating profit. Finally, on *Schedule A,* "other deductions" and "other income" are applied against "operating profit" to produce the "net profit for the period." The information at the foot of *Schedule B* relating to "waste produced & value" is of a statistical nature and will be found incorporated just above it in the schedule—appearing in "cost of production."

Balance sheets have not been reproduced with this article. Balance sheets and profit and loss statements are commonly filed by months, thus forming an historical record. Such a file is valuable, and when additional typed or photostatic copies of the financial statements are available, then a special kind of file may at times be even more valuable.

In such a file, the financial statements are arranged according to some index of business activity, often sales volume.

For practical utility such a special file should seldom contain more than 12 monthly or 13 four-week period statements. After that point has been reached, the addition of each new statement should by accomplished by the elimination of the oldest statement in the file.

In explanation of this special file, it should be realized that many of the expenses of business tend to fluctuate more or less in sympathy with sales volume. A month of high sales volume means a month of business activity which to some extent affects most of the departments of the mill.

As a result, many expenses tend to increase during periods of sales activity. By the same token they tend to decrease during months when sales are quiet.

If in any one month an expense item distinctly contradicts this fundamental relationship, such contradiction may well call for investigation. It should be noted that the mere fact of a contradiction is in itself far from conclusive.

It does, however, tend to arouse intellectual curiosity as to the "whys" and "wherefores." The special file referred to provides a semi-automatic means of attracting attention to such contradictions.

Certain items on balance sheets also tend to fluctuate somewhat in harmony with sales activity, the principal items being inventories and receivables. A special file of balance sheets arranged in order of sales volume provides a quick and semiautomatic means of checking for abnormalities of inventories and receivables. Here again the file merely suggests a need for investigation, but in serving that simple function it more than justifies its existence.

In some departments of mill activity sales volume is not a reasonable explanation of expense. Nearly always, however, there is some factor which can be used as an index of departmental activity. The expense of operating many mill departments, for example, is closely related to departmental production activity. Reports or statements referring to such departments may be arranged according to relative production with interesting results leading toward expense control.

Several effective methods are commonly used to achieve simplification of business figures. Insofar as individual accounts or amounts are concerned, simplification is achieved by a process called "rounding." This is accomplished by increasing or reducing the cents column to the next closest dollar. It is much easier, particularly for the non-technical man, to understand a business report when the figures have been simplified by rounding.

PHOTOS COURTESY STANLEY STEEL STRAPPING

LEFT: Roll of fabric is wrapped with burlap at Aldora Mills, Barnesville, Ga. One and a half million pounds of the fabric is shipped monthly to the parent company, General Tire and Rubber Co.

BELOW: Three-strap roll of fabric is moved to the storage area at Aldora; the rolls are stacked in layers.

How two mills proved this equation:

Better Packagin = More Profits

Staff prepared Exclusive

THE SAFE delivery of product from shipping room to destination is a major problem in all industries, and the textile industry is no exception. Obviously, one step toward solving this problem is to improve packaging methods, and one approach is to use steel strapping.

In many mills today the lightweight, corrugated container secured with strapping has replaced the heavy wooden shipping crate or box so long in common use. The result of improved packaging methods in these mills has meant not only decreased shipping costs but also increased package security. Strapping has proved strong, efficient, a deterrent to pilferage, and safe to handle, mills report.

In addition to providing reinforcement for containers, flat steel strapping has several other applications in the textile industry, i.e., closure of corrugated containers, heavy duty carloading, and baling of compressible items such as rolls of cloth. This versatile application has been one reason for its acceptance; another has been the development of manually operated and power-operated magazine tools for the swift application—tensioning, sealing, cutting—of strapping.

Weaving Mill. "Dependable. Easy to use. Damage in transit

virtually eliminated. Such an integral part of our operations that we consider it routine." This is the way that C. M. Neuner, manager of Aldora Mills, Barnesville, Ga., talks about the use of steel strapping in his handling operations.

Aldora Mills, which produces Nygen, rayon, and nylon tire fabric, monthly ships 1.5 million pounds of the fabric to its parent company, The General Tire and Rubber Co. of Akron, Ohio. In its packing and shipping operations, Aldora Mills makes two distinct applications of steel strapping. One type of strapping is applied to rolls of fabric, weighing from 500 to 1,200 pounds each. A heavier gauge strap is used in carloading.

In the first application, five-foot rolls of fabric are wrapped in burlap to keep out dust and dirt. Two men, using two-piece strapping tools, then apply three straps to each roll. After the strapping operation, the rolls are moved to storage or shipping areas where they are stacked flat in layers. In transit, the rolls have a tendency to cling together in a firm pile.

"Strapping has helped to eliminate damage to the rolls of fabric during shipping," Mr. Neuner said. "Before using strap, we braced our freight car loads by nailing 2 x 4's against the ends and sides of the rolls. You see, the rolls are particularly vulnerable at the ends. Sometimes, though, severe jolts would shake the braces loose. If the load shifted very much the ends could be torn. Even the slightest damage can be costly, for each roll of fabric is worth roughly $1,000. In fact," Mr. Neuner stated, "the savings we have realized from the elimination of damage has more than offset the initial costs of installing the steel strapping system."

Handling Hosiery. The Union Manufacturing Co. of Union Point, Ga., knows what it means to have satisfied customers. For 20 years, the company has never had a package—either of socks or yarn —broken during shipment. According to Union's president, F. S. Bryan, steel strapping has been the reason for his company's unblemished shipping record since 1940. Previous to this, Union used wire to secure its containers. Mr. Bryan said that wire stretched, no matter how tightly or uniformly it was applied. And if the wire snapped or stretched too much, resulting in eventual package damage, then a large number of socks could be lost or hopelessly soiled.

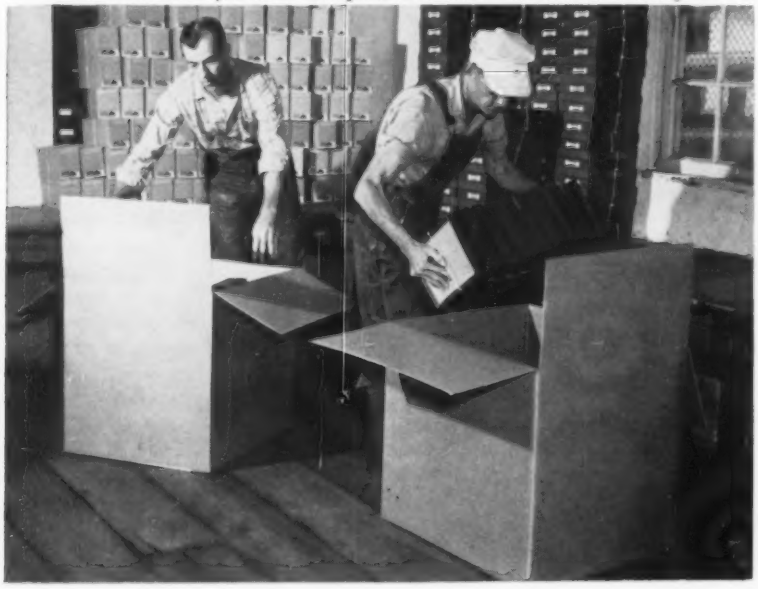
After a careful analysis of the company's material handling problems in 1940, a trial order of strapping and trial strapping tools was sent to the mill. The company quickly adopted this packaging method.

Union, which produces about 5,000 dozen pairs of socks daily and 60,000 pounds of yarn monthly, ships most of its goods by truck. Union sells its socks to such retailers as J. C. Penney, Montgomery Ward, W. T. Grant, and S. H. Kress. They either use the 60,000 pounds of yarn in their own mill or sell part of it to other hosiery mills in North and South Carolina.

The company uses the Stanley "Ace" steel strapping tool in its packaging operations. A large corrugated container is packed with several boxes of socks. Then two straps are applied for reinforcement and closure. Each strap is placed five to six inches from the end of the container. The semi-automatic magazine tool holds 100 seals. It tensions, crimps, and cuts each strap in a matter of seconds.

"The strapping does a good job and makes a good, strong joint," Mr. Bryan stated. "In addition to time-saving benefits, I think the advantages of using steel strapping are simplicity, security, and safety in the loading operation."

Boxes of socks are packed in corrugated containers at Union Manufacturing Co. . . . two straps are applied to each container



Conventional narrow fabric looms (left) were modified by mill personnel. Double shuttles (right) are used for two-ply fabrics.

Exclusive

Weaving technique doubled webbing output

STANDARD shuttle-type narrow fabric looms in the plant of Lea & Sachs, Inc., have been modified in such a way that production of each loom is practically doubled, greater flexibility of design is provided, and quality of multiple ply webbing is improved, according to George B. Martin, president of the Chicago, Ill., firm which manufactures and markets both elastic and non-elastic narrow fabrics.

Lea & Sachs research engineers had found that their needle looms operate at about ten times the speed of conventional shuttle looms, producing satisfactory fabrics at a somewhat lower labor cost, but they were not satisfied with this. The scope of the product of the needle looms was too sharply restricted, many of the theoretical savings in production costs were offset by unexpected inefficiencies, and fabrics were unsuitable in applications where abrasive wear was a factor. Further improvement of the production method became a challenge.

After five years of design and experiment and a year of production tests, the new weaving technique was perfected, and now a sufficient number of looms have been modified to provide a production capacity of 500,000 yards of multiple ply webbing weekly. At present, production is confined to two-ply fabrics, or two-ply fabrics with stuffer warps.

Fabrics made by the new method are said to be stronger and more uniform, more easily dyed, and abrasion resistant.

"Basically, there is nothing startling, new, or novel about our idea," Mr. Martin explained, "but, like most improvements in weaving, it is a combination of factors that have been fairly widely known in the market for some years. We operate these looms with a double shuttle and make multiple ply fabrics on them with one shuttle weaving for each ply.

"For example, a two-ply fabric or a two-ply fabric with a stuffer warp would be woven with two shuttles, a three-ply fabric with three shuttles, and so on. Obviously, in this arrangement each shuttle lays in the filling for its par-

Continued on page 103

MODERN TEXTILE MANAGEMENT

Article 4—Evolutionary Operation: New concept in process development

by Norbert Lloyd Enrick*
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Exclusive

FEW PRACTICAL mill men, if any, will claim that they have enough experience to know exactly the process settings—roll distances, speed ratios, tensions, twists, and other variables—that will yield optimum processing conditions. While a general range of best settings is known, the best possible situation in terms of ends-down and loom-stops, quality/cost ratio and productivity is attained only after experimenting in the mill. This experimental work helps "zero in" on the best process settings and adjustments.

A systematic procedure, which helps the mill man in his process research to find the best settings, is the relatively new technique of "Evolutionary Operation," or "Evop" for short, originated by G. E. P. Box for Imperial Chemical Industries, and used in the manufacture of synthetic fibers (1)**. In subsequent processing—spinning, weaving, and finishing—profitable applications of Evop have just begun to be explored, so that only a few illustrations are known so far (2).

How Evop Works. Experience has shown that Evolutionary Operation works best where it is made part of daily production. The program involves the introduction of routines for systematic small changes in the levels at which process variables are held. After each set of changes, the effects on quality, waste, yield, and production are reviewed. Based on this review, further changes are planned, aimed at gradually "nudging" the process towards those multivariable adjustments that lead to the attainable optimum.

In reporting considerable savings from even the first few months of the Evop program, a synthetic-fiber company reported that they were able to investigate the effect of some twenty variables on quality of product, and that the cost savings and quality improvements resulted from the discovery that several variables, which had always been considered unimportant, could actually be shown to have a significant effect on production.

Illustration of Method. Let us examine, for illustrative purposes, how the method of evolutionary operation works in a slashing room in a mill. Optimum size application in slashing will minimize yarn breaks in weaving and hence yield high weaving efficiency.

Existing practice in this mill involved sizing with a corn starch dispersion at a viscosity of 60 centipoises, with finisher roll pressures of 22 pounds per hundred ends. This set-up is shown as "1" in *Figure 1*.

It was decided by the group in charge of the Evop program—technical superintendent, slashing and weaving foremen, and quality control laboratory head—to check Set-Up 1 against the additional Set-Ups 2 through 5, at the small changes in variables shown in *Figure 1*. These changes were considered adequate to have noticeable effects on weaving performance, yet small enough to assure that no unexpected processing or quality problem would result.

By running each of the five set-ups four times, four testing cycles were obtained, as shown in *Table 1*. Each testing cycle involved 20 loom beams per slashing set-up, with 32 hours of loom-stop observations per beam, reported in terms of observed warp-stops per 100 long-running hours. With some planning, these data can be obtained readily from the routine loom checking program, without need to assign extra personnel to this work.

The results in *Table 1* may be visualized more fully by inserting them in an Evop diagram, as shown in *Figure 2*. In this diagram, the Set-Up Numbers from 1 through 5 of *Figure 1* have been

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**Numbers in parentheses are literature references at the end of the article.

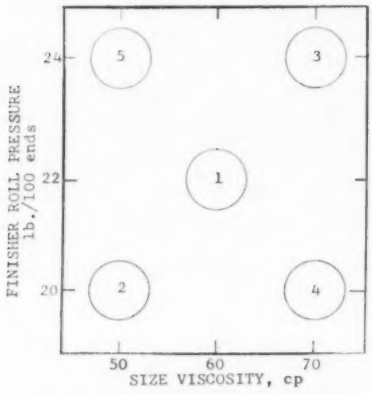

FIG. 1. Design of investigation, comparing existing Processing Set-Up 1 against Set-Ups 2 through 5.

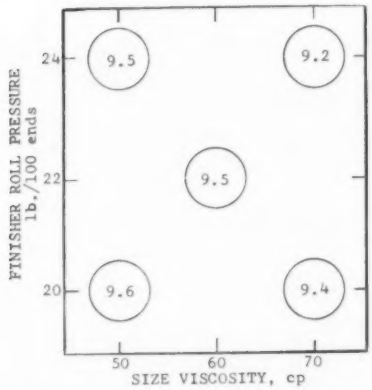

FIG. 2. Warp stops per one hundred loom hours, resulting from Processing Set-Ups 1 through 5 of Figure 1.

replaced by the corresponding actual warp stops observed.

Evaluation of Results. In evaluating the results obtained thus far from the Evop program, it is necessary to assess the range of possible sampling and testing error —the "Error Limit." A practical formula, using the Average Range, as shown in *Table 1*, is:

Error Limit = $\pm F_s$ x Average Range (1)

The factor F_s is a multiplier yielding 95 per cent Confidence Limits (3), and is reproduced in *Table 2*. It yields Error Limits which are equivalent to the well-known Confidence Limits familiar from the control chart programs of most up-to-date mills. For the illustration above, with an Average Range of 4.0, with each Range based on four entries (from the four test cycles), F_s is found to be 0.49, so that:

Error Limit = $\pm 0.49 \times 4.0 = \pm 2$ (rounded out)

The Error Limit for averages, in terms of warp stops per 100 loom running hours, is thus $\pm$ 2.

A further *Table 3*, obtained by arranging the averages of *Table 1* to correspond to the scheme of *Figure 2*, results in the additional finisher roll pressure and size viscosity averages shown. The differences between these new averages indicate the effects of changing finisher roll pressures and size viscosity.

The effect of size viscosity, of -2.5, means that with higher viscosity, warp stops *declined*. More-

TABLE 1. Warp Stops per One Hundred Loom Running Hours Obtained from Five Slashing Set-Ups, Using Four Test Cycles for Each Set-Up

Slashing Set-Up Used*	Testing Cycle**				Result	
	I	II	III	IV	Average	Range
1	93	96	96	95	95	3
2	98	97	96	93	96	5
3	92	93	92	91	92	2
4	93	95	92	96	94	4
5	94	98	92	96	95	6
Total					472	20.0
Grand Average,	472 ÷ 5				94.4	
Average Range,	20 ÷ 5					4.0

*Each Slashing Set-Up involved a different combination of Finisher Roll Pressure and Size Viscosity, as identified from the systematic arrangement shown in Figure 1.

**Each Testing Cycle consisted of 20 loom beams per Slashing Set-Up, with 32 hours of loom-stop observations per beam. Data shown represent the warp stops per one hundred loom running hours.

TABLE 2. Factors F_s for Determination of Error Limits

Sample Size*	Factor, F_s
2	1.25
3	0.68
4	0.49
5	0.37
6	0.32
7	0.28
8	0.25
9	0.23
10	0.20

*Sample Size represents the number of entries or units used in determining each Range (3).

TABLE 3. Effects of Finisher Roll Pressure and Size Viscosity on Average Warp Stops per One Hundred Loom Hours*

Finisher Roll Pressure, lb/100 ends	Size Viscosity cP			Avg.	Effect of Roll Pressure**
	50	60	70		
24	95		92	93.5	
22		95			-1.5
20	96		94	95.0	
				94.25	
Average	95.5		93.0	94.5	
Effect of Viscosity***		-2.5			

*Warp Stops shown are the averages for the five Slashing Set-Ups of Table 1, arranged in the same scheme as shown in Figures 1 and 2.

**The difference between Viscosity Averages at different finisher roll pressures, 93.5 - 95.0 = -1.5, indicates that warp stops may decrease at higher roll pressures.

***The difference between Viscosity Averages, 93.0 - 95.5 = -2.5, indicates that warp stops decrease at higher size viscosities.

over, one can place considerable confidence in this observation, since the effect exceeded the Error Limit of ±2. Further improvements in warp stops, by further raising the viscosity, suggest themselves.

Finisher roll pressure changes also produced a beneficial effect of -1.5, suggestive of the attainment of further warp stop reductions with still higher pressures. However, the evidence obtained is relatively weak, being somewhat smaller than the Error Limit within which sampling and testing error may be expected.

Further Evop Investigations. Using the results obtained from the first phase of the Evop program, further investigations should now be made. In this particular illustration, a good decision for a further phase of investigation is:

1. Select the new center, presenting the new Set-Up 1 at: (a) Somewhat higher finisher roll pressure of 23 pounds per 100 warp ends; (b) Somewhat greater viscosity at 65 cp.
2. Establish the new Set-Ups 2 through 5 at spacings of 2 pounds of roll pressure and 5 cp of viscosity, in a pattern parallel to *Figure 1*, but around the new center.
3. After this new phase of operations has been completed, review the results and plan further phases accordingly.

Expanding the Program. Once experience has been gained with this type of operation, the program may be expanded. Additional criteria may be included, such as processing cost and fabric strength and appearance. Also, further variables may be introduced into the investigations, such as stretch, drying temperatures, and production rates.

Variables which have been pinpointed or which have been found unimportant may be replaced with new variables to be investigated in their place. Thus, Evop becomes an integral part of efficient mill operation.

Evolutionary operation requires no special equipment and involves relatively simple calculations and evaluations, but it does require some patience in waiting for the test results and observations to come in. The novice in mill operation might be inclined to prefer confining to the research laboratory all investigative work concerning optimized processing settings. This approach would be unrealistic, since one can hardly duplicate all important mill conditions in the laboratory.

In the mill, the best operating practice will usually differ quite considerably from the theoretical level predicted from laboratory or pilot plant trials. The laboratory provides the starting point prior to production. In actual mill operation, Evop then seeks successive modifications of settings—be it speeds, roll distances, twists, or tensions—until the optimum combinations have been found for the particular stock processed and the end-use envisioned.

The philosophy of Evolutionary Operation is that a process should not only be run to yield good product at low cost, but also to provide information on how to further improve production! The tangible benefits, derivable from this philosophy, form the subject of this paper.

Acknowledgment

The data in this paper are based on the author's work while associated with the Institute of Textile Technology, Charlottesville, Va. (4).

Appreciation is expressed to Dr. L. H. Hance, president, and Dr. Jack Compton, vice-president and director of research, for guidance and encouragement in statistical and operations research work.

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3. Enrick, N. L., "Quality Control," 4th ed. New York: The Industrial Press, 1960.
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► *Next Month: How to find the best processing conditions when there are many variables.—The Editors*

Executive views

(from page 31)

would seem that in a mill employing this can spinning, laps would be required—better laps if possible than are commonly being made today.

There is also talk of cards producing quality sliver at a production of 50 pounds an hour or more; and, if this proves to be practical, it will be a great step forward in reducing the investment in a new mill.

Great improvements have been made in the speeds of drawing frames, and perhaps something near the limit of drawing frame production has already been achieved.

It is always risky to talk about limits of production when dealing with stable materials like metals, where some happy discovery of a new technique can double or quadruple production speeds; but when dealing with cotton fibers which are far from stable, it is reasonable to assume that there is some practical limit to the speed at which these fibers can be manipulated in any given process.

Air conditioning has gone a long way toward helping with higher speeds in practically every department of a mill, and perhaps any further progress in stepping up speeds will have to depend on chemical treatment of the fibers to make them cling together better so that they can pass through the drafting processes at a higher rate.

ONE THING at least is certain if the American textile industry must compete unprotected with foreign textile industries paying a fraction of our wages: *We must either find ways of cutting manufacturing costs or the textile industry must disappear.*

Nothing can be any more certain than that the labor unions are going to remorselessly keep pushing up wages. Textile wages are already out of line with those in many industries; and, if they are pushed up just a little bit more without any corresponding increases in production, foreign mills will have so much advantage over ours that they must ultimately get practically all of the business.

Choosing the Best Draft

Mills can use this study to more profitably balance the factors of cost and quality in allocating drafts from picking through spinning

Part 3 — Carded Long Staple Cotton[1]

by Jack Simpson, Arsema T. Callegan, and C. L. Sens
Southern Regional Research Laboratory[2]

Exclusive

Important Findings from This Study

►In general, light-weight card sliver and first and second drawing slivers produced the most uniform roving.

►Allocation of drafts made as much as 22 per cent difference in yarn strength.

►Comparatively high drafts (20-35) can be employed with the long-draft systems when spinning medium and fine counts (40s, 60s, and 70s). *It is believed that the industry is presently not taking advantage of this.*

►There is a tendency to increase the roving hank when spinning finer yarns—for example, using a 5-hank roving to spin a 60s yarn. But this study indicates that a 2- or 3-hank roving would be acceptable for spinning 40s, 60s, and 70s yarns.

THIS REPORT covers the final phase of a study to determine the allocation of drafts between processes from picking through spinning to obtain yarns of optimum quality. The previous studies (2, 3)[3] dealt with medium and short staple cottons while this study reports the findings for long staple cottons.

The long staple cottons selected were a Wilds 13, 1¼″ staple, and an unknown variety, 1¼″ staple from a different growth area. The plan of work, testing and selection procedure used was the same as that described in (2).

Materials, methods

Fiber Properties. The fiber properties of the two selected long staple cottons are listed in *Table 1*. The drafting systems investigated, the roll settings, spindle speeds, etc., and test methods employed were described in (2). The long staple cottons of this study were carded with a production of 5 lb/hr, whereas for the short and medium staples a production of 12 lb/hr was used. The cottons were then processed through first and second drawing, roving, and spinning. A 4.00 TM was used for both cottons.

TABLE 1. Fiber Properties of the Selected Cottons

	Wilds 13	Unknown
Classer's Evaluation		
Length, In.	1¼	1¼
Grade	MT	MT
Fiber Length and Distribution (Fibrograph)		
UHM, In.	1.30	1.26
Mean, In.	1.03	0.92
Uniformity Ratio, %	79	73
Micronaire[1] Units	3.90	3.85
Strength[2] Index	8.0	7.84
Maturity[3], %	92	77

[1]Curvilinear scale
[2]Pressley method, zero gauge
[3]Random maturity, NaOH method

Results, discussion

The results showing the effect of the weight picker lap on the uniformity [coefficient of variation (Uster[4])] of 45, 55, and 65 grains/yd (3.2, 3.9, and 4.6 kilotex) card slivers are listed in *Table 2*.

An analysis of variance test[5] be-

[1]Part 1, dealing with medium staple cottons, appeared in TEXTILE INDUSTRIES for May, 1960, pages 209-210, 213, 217, 219, 223, 225, and 227. Part 2, dealing with short staple cottons, appeared in TEXTILE INDUSTRIES for November, 1960, pages 101, 104-105, 108-109, and 115.

[2]One of the laboratories of the Southern Utilization Research and Development Division, U.S. Department of Agriculture, Agricultural Research Service. It is at New Orleans, La.

[3]Numbers in parentheses are references at the end of this article.

[4]Use of a company and/or product name by the Department does not imply approval or recommendation of the product to the exclusion of others which may be suitable also.

[5]A detailed description of these tests was given in the previous report on medium staple cottons (2).

TABLE 2. Effect of Linear Weight of Picker Lap on Card Sliver Uniformity

Wilds					Unknown			
Picker Lap Wt		CV% (Uster) Card Sliver Wt, Gr/Yd and (Kilotex)			Picker Lap Wt		CV% (Uster) Card Sliver Wt, Gr/Yd and (Kilotex)		
Oz/Yd	Kilotex	45 (3.2)	55 (3.9)	65 (4.6)	Oz/Yd	Kilotex	45 (3.2)	55 (3.9)	65 (4.6)
		1ST REPLICATE					1ST REPLICATE		
11	341	3.19	2.89	2.66	11	341	3.36	2.84	2.65
13	403	3.10	2.96	2.57	13	403	3.12	3.20	2.69
15	465	3.25	3.07	3.16	15	465	3.13	3.06	3.47
17	527	[1]	2.92	2.96	17	527	[1]	3.23	3.17
		2ND REPLICATE					2ND REPLICATE		
11	341	3.98	3.94	3.25	11	341	3.55	3.22	3.00
13	403	3.15	3.56	3.15	13	403	3.50	2.99	2.94
15	465	3.49	3.20	3.82	15	465	3.02	2.77	2.90
17	527	[1]	3.62	3.26	17	527	[1]	3.28	2.94

[1]Unable to card with the available draft constants

TABLE 3. Effect of Card Sliver Weight on Uniformity of First Drawing

Wilds					Unknown				
Card Sliver Wt		CV% (Uster) 1st Dr Sliver Wt Grain/Yd and (Kilotex)			Card Sliver Wt		CV% (Uster) 1st Dr Sliver Wt Grain/Yd and (Kilotex)		
Grain/ Yd	Kilotex	45 (3.2)	55 (3.9)	65 (4.6)	Grain/ Yd	Kilotex	45 (3.2)	55 (3.9)	65 (4.6)
		1ST REPLICATE					1ST REPLICATE		
45	3.2	4.26	3.56	3.23	45	3.2	4.28	3.94	3.57
55	3.9	4.46	4.23	3.57	55	3.9	4.16	3.94	3.36
65	4.6	5.03	4.54	3.94	65	4.6	4.04	4.28	3.92
		2ND REPLICATE					2ND REPLICATE		
45	3.2	3.85	3.36	3.04	45	3.2	4.25	3.96	3.71
55	3.9	3.97	3.75	3.20	55	3.9	4.17	3.95	3.53
65	4.6	4.01	3.48	3.49	65	4.6	4.38	4.22	3.77

tween the 11, 13, and 15 oz/yd (341, 403, and 465 kilotex) laps for both the Wilds and Unknown cottons showed no significant difference between them in regard to their effect on card sliver uniformity. The analysis of variance test could not include the 17 oz/yd (527 kilotex) lap since it was impossible to card 45 grains/yd sliver from it with the available draft constants.

The variance ratio test for the Wilds indicated that the 13 oz/yd picker lap was the most reliable to be used for producing 45, 55, and 65 grains/yd card sliver. This was deduced from the following instances of significance. The 45 grains/yd card sliver (replicate No. 1) from the 13 oz/yd picker lap was significantly more uniform than that from the 15 oz/yd lap. The 65 grains/yd card sliver from the 13 oz/yd lap was significantly more uniform than from the 15 and 17 oz/yd lap.

For the 2nd replicate the following instances showed significance. The 45 grains/yd sliver from the 13 oz/yd lap was more uniform than that from either the 11 or 15 oz/yd lap. The 55 grains/yd card sliver from the 13 oz/yd lap was more uniform than that from the 11 oz/yd lap. The 65 grains/yd sliver from the 13 oz/yd lap was more uniform that that from the 15 oz/yd lap.

The instances of significance for the variance ratio test for the Unknown cotton were very erratic and no trend was discernible. The 13 oz/yd picker lap was arbitrarily selected for producing the card sliver. The effect of weight of card sliver on the uniformity of first drawing sliver is shown in *Table 3*.

The analysis of variance test for the Wilds cotton showed a very significant trend in favor of the light weight (45 grains/yd) card sliver producing the most uniform first drawing sliver of all weights. The analysis of variance tests for the Unknown cotton also reveal a trend of decreasing uniformity of first drawing with increasing weight of card sliver. However, the variance ratio tests for this cotton indicated that it was possible to increase the weight of card sliver to 55 grains/yd without decreasing the uniformity of the first drawing slivers.

The effect of the weight of first drawing sliver on the uniformity of second drawing sliver is shown in *Table 4*. The analysis of variance test for both the Wilds and the Unknown cottons showed that the light weight first drawing sliver (45 grains/yd) produced the most uniform second drawing slivers of all weights.

Table 5 shows the effect of weight of second drawing sliver on the uniformity of roving.

The analysis of variance test for both the Wilds and Unknown cottons indicated generally a decrease in roving uniformity with an increase in weight of second drawing. The fact that the analysis of variance tests were significant for three prespinning processes for the long staple cottons whereas this was not true for the medium and short staple cottons (2, 3) indicates that long staple cotton is more sensitive to draft allocation than medium and short staples. It was also found in another study (4) that long staple cotton was more sensitive to spinning draft than the medium and short staples.

The effect of spinning draft on the yarn skein strength-product of the Wilds and Unknown cottons is shown in *Figure 1*. Two replicates of 10/1, 20/1, 30/1, 40/1, 60/1, and 70/1 (59, 30, 20, 15, 10, and 8 tex) yarns were spun from the Unknown variety while two replicates of 20/1, 30/1, 40/1, 60/1, and 70/1 yarns were spun from the Wilds. The replicates for the Unknown cotton were spun one following the other, with very little time delay, while the second replicate for the Wilds cotton was spun approximately a year later.

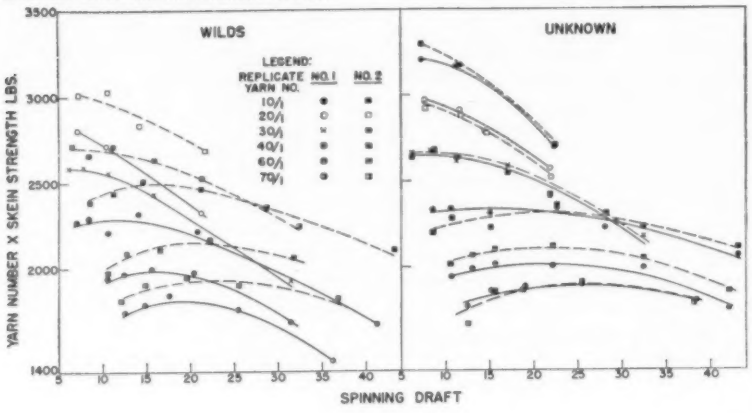
TABLE 4. Effect of First Drawing Sliver Weight on Uniformity of Second Drawing

Wilds					Unknown				
		CV% (Uster)					CV% (Uster)		
1st Dr Sliver Wt		2nd Dr Sliver Wt			1st Dr Sliver Wt		2nd Dr Sliver Wt		
Grain/		Grain/Yd and (Kilotex)			Grain/		Grain/Yd and (Kilotex)		
Yd	Kilotex	45 (3.2)	55 (3.9)	65 (4.6)	Yd	Kilotex	45 (3.2)	55 (3.9)	65 (4.6)
		1ST REPLICATE					1ST REPLICATE		
45	3.2	4.50	4.59	4.21	45	3.2	4.29	4.29	3.94
55	3.9	4.98	4.98	4.16	55	3.9	4.42	4.41	3.94
65	4.6	5.23	4.97	4.27	65	4.6	4.95	5.16	4.22
		2ND REPLICATE					2ND REPLICATE		
45	3.2	4.30	3.77	3.60	45	3.2	4.47	4.34	3.63
55	3.9	4.55	4.00	3.88	55	3.9	4.53	4.21	4.01
65	4.6	4.71	4.56	4.16	65	4.6	4.81	4.81	4.83

TABLE 5. Effect of Second Drawing Sliver Weight on Roving Uniformity

Wilds					Unknown				
		CV% (Uster)					CV% (Uster)		
Roving		2nd Dr Sliver Wt Grain/Yd and (Kilotex)			Roving		2nd Dr Sliver Wt Grain/Yd and (Kilotex)		
Hk	Tex	45 (3.2)	55 (3.9)	65 (4.6)	Hk	Tex	45 (3.2)	55 (3.9)	65 (4.6)
		1ST REPLICATE					1ST REPLICATE		
0.50	1181	—	—	—	0.5	1181	6.7	6.3	6.7
1.0	590	6.8	6.5	6.9	1.0	590	6.8	7.1	7.6
1.5	394	—	—	—	1.5	394	7.2	7.2	7.6
2.0	295	6.7	6.8	7.0	2.0	295	7.1	7.5	7.5
3.0	197	7.0	7.5	7.5	3.0	197	7.8	7.8	7.9
4.0	148	7.6	7.3	7.9	4.0	148	7.8	7.9	8.2
5.0	118	7.7	7.9	8.5	5.0	118	8.3	8.3	8.7
6.0	98	8.7	8.5	9.3	6.0	98	9.0	8.6	9.1
		2ND REPLICATE					2ND REPLICATE		
0.5	1181	—	—	—	0.5	1181	6.4	6.4	6.7
1.0	590	—	—	—	1.0	590	7.1	7.2	7.6
1.5	394	6.9	7.5	6.9	1.5	394	7.5	7.4	7.2
2.0	295	7.0	7.7	7.5	2.0	295	7.1	7.6	7.6
3.0	197	7.7	8.3	8.2	3.0	197	7.5	8.0	7.9
4.0	148	8.3	8.0	8.0	4.0	148	7.4	7.7	8.1
5.0	118	8.7	8.6	8.7	5.0	118	8.0	8.1	9.1
6.0	98	8.5	8.5	8.7	6.0	98	8.2	8.0	8.3

FIG. 1. The effect of spinning draft on the skein count-strength products of yarns spun from the Wilds and the Unknown cottons.



The coarse yarns for both cottons decrease in strength as the spinning draft is increased while the medium and fine yarns increase, reach a maximum and then decrease. The curves are very similar to those for the medium staple cotton (2). The curves for the two replicates of the Unknown cotton, like those of the medium and the short staple cottons of the previous studies (2, 3), lie close together, while for the Wilds cotton this is not true. However, the optimum spinning drafts for the two replicates of the Wilds cotton are approximately the same.

The coefficients of variation (Uster) of the yarns from the different rovings are shown in *Table 6*. Generally, for the coarse and medium yarns there is a decrease in uniformity with an increase in draft. As with the medium and short staple cottons, the plot of spinning draft against coefficient of variation resulted in a much larger scatter of points than similar plots for the skein count-strength-products shown in *Figure 1*. Therefore, the results are presented in tabular form.

TABLE 6. Effect of Hank Roving (Spinning Draft) on Yarn Uniformity

Yarn Number		Roving		CV % (Uster)			
				Wilds		Unknown	
CC	Tex	Hk	Tex	Replicate 1	Replicate 2	Replicate 1	Replicate 2
10	59	0.5	1181	—	—	14.7	15.6
		1.0	590	—	—	13.1	13.3
		1.5	394	—	—	12.8	13.1
20	30	1.0	590	14.9	14.7	15.6	15.1
		1.5	394	—	15.2	15.1	14.6
		2.0	295	14.7	13.6	14.1	16.1
		3.0	197	14.5	13.7	14.5	15.1
30	20	1.0	590	17.4	16.9	16.7	17.4
		1.5	394	—	16.5	15.4	16.0
		2.0	295	16.2	15.8	16.1	15.9
		3.0	197	15.8	15.2	15.3	15.1
		4.0	148	15.7	15.8	15.3	15.0
		5.0	118	15.2	15.8	15.2	15.1
40	15	1.0	590	20.4	18.0	18.0	16.9
		1.5	394	—	16.9	16.3	16.4
		2.0	295	17.8	16.5	16.7	16.0
		3.0	197	17.6	16.0	16.4	16.5
		4.0	148	18.1	15.7	15.4	14.9
		5.0	118	17.4	15.7	15.3	15.6
		6.0	98	17.6	16.4	—	—
60	10	1.5	394	—	18.8	19.5	18.6
		2.0	295	20.1	18.0	18.8	19.3
		3.0	197	17.8	17.9	18.4	19.1
		4.0	148	19.2	19.2	17.8	18.1
		5.0	118	19.8	18.0	18.9	18.8
		6.0	98	19.5	18.5	17.6	18.5
70	8	2.0	295	21.6	17.3	18.9	18.5
		3.0	197	20.0	17.2	18.0	18.5
		4.0	148	19.4	17.3	18.5	18.0
		5.0	118	20.0	16.6	18.0	18.2
		6.0	98	20.4	16.9	18.2	20.3

Comparison of Draft Allocations. To test the over-all effectiveness of the draft allocations developed the following experiment was performed with the Wilds cotton. 20/1 yarns were spun as follows:

Optimum Organization
3.00 HR (197 tex)
45 gr/yd 2nd drawing
45 gr/yd 1st drawing
45 gr/yd card sliver
13 oz/yd lap

Worst Organization
1.00 HR (590 tex)
65 gr/yd 2nd drawing
65 gr/yd 1st drawing
65 gr/yd card sliver
17 oz/yd lap

Medium Organization
3.00 HR (197 tex)
65 gr/yd 2nd drawing
65 gr/yd 1st drawing
65 gr/yd card sliver
17 oz/yd lap

30/1 yarns were spun as follows:

Optimum Organization
4.00 HR (148 tex)
55 gr/yd 2nd drawing
45 gr/yd 1st drawing
45 gr/yd card sliver
13 oz/yd lap

Worst Organization
1.00 HR (590 tex)
65 gr/yd 2nd drawing
65 gr/yd 1st drawing
65 gr/yd card sliver
17 oz/yd lap

Continued next page

TABLE 7. Comparison of Yarn Properties from Different Draft Allocations

Draft Organization	Yarn Number x Skein Strength, Lb			Yarn Number x Single Strand Strength gm			Elongation at Break, %			Coefficient of Variation (Uster), %		
	Yarn Number			Yarn Number			Yarn Number			Yarn Number		
	20/1 (30 tex)	30/1 (20 tex)	60/1 (10 tex)	20/1 (30 tex)	30/1 (20 tex)	60/1 (10 tex)	20/1 (30 tex)	30/1 (20 tex)	60/1 (10 tex)	20/1 (30 tex)	30/1 (20 tex)	60/1 (10 tex)
Optimum	2754	2404	1881	10,068	9586	7838	8.09	7.19	5.51	15	15.6	19.2
Medium	2614	2351	1825	10,044	9405	7787	8.34	7.12	5.69	15.7	16.1	20.2
Worst	2249	1934	1562	8790	2387	6845	7.34	6.59	5.12	16.6	18.5	20.9

Medium Organization
4.00 HR (148 tex)
65 gr/yd 2nd drawing
65 gr/yd 1st drawing
65 gr/yd card sliver
17 oz/yd lap

61/1 yarns were spun as follows:

Optimum Organization
4.00 HR (148 tex)
55 gr/yd 2nd drawing
45 gr/yd 1st drawing
45 gr/yd card sliver
13 oz/yd lap

Worst Organization
2.00 HR (295 tex)
65 gr/yd 2nd drawing
65 gr/yd 1st drawing
65 gr/yd card sliver
17 oz/yd lap

Medium Organization
4.00 HR (148 tex)
65 gr/yd 2nd drawing
65 gr/yd 1st drawing
65 gr/yd card sliver
17 oz/yd lap

Examination of the above organizations, *Figure 1* and *Tables 2* through 5, shows that the optimum organization employs the optimum spinning draft, second drawing sliver, first drawing sliver, card sliver, and picker lap. The worst organization employs the allocations found to be the worst at each process. The medium organization employs the optimum spinning draft and the worst allocations at each process prior to spinning.

Table 7 lists the skein and single strand count-strength products, the per cent elongations at break and the per cent coefficient of variation (Uster) of the yarns spun according to the above organizations.

The skein count strength products of the 20/1, 30/1, and 60/1 yarns spun with the optimum draft allocations were significantly better than those spun with the worst allocations. The average improvement in strength obtained with the best allocations over the worst was approximately 22 per cent. This large difference emphasizes the importance of selecting the correct draft allocations.

The large differences in strength between the yarns from the optimum and worst allocations and the small differences between those from the optimum and medium allocations show that the spinning draft has more influence on the skein strength than the drafts at the prior processes. However, the importance of the draft allocations at the processes prior to spinning would probably be brought out better with a test that considered a longer length of yarn. This is demonstrated by the fact that the differences in skein strength between the 20/1 yarns from the optimum and medium allocations are highly significant, while for the 30/1 and 60/1 they are not.

This is also demonstrated in the fact that the differences between the single strand count-strength products of the 20/1, 30/1, and 60/1 yarns from the optimum and worst allocations are highly significant, while the differences between those from the optimum and medium allocations are not significant even for the 20/1 yarns. The optimum organization yields the most uniform yarns as determined by the per cent coefficient of variation (Uster). The per cent elongations at break of the 20/1, 30/1, and 60/1 yarns from the optimum and medium allocations were higher than those from the worst allocations, although there was little difference between them.

Conclusions. It was found that the long staple cottons in this study were more sensitive to the draft allocations prior to spinning than the medium and short staple cottons of previous studies (2, 3). In general, light-weight card sliver and first and second drawing slivers produced the most uniform roving. The yarn strength vs spinning draft curves were similar to those of the medium and short staple cottons. For coarse yarns an increase in spinning draft resulted in a decrease in yarn strength, while for the medium and fine yarns there was first an increase, a maximum, and then a decrease as the spinning draft was increased.

The importance of selecting the proper draft allocations was demonstrated in that the 20/1, 30/1, and 60/1 yarns spun with the optimum allocations indicated by the study were approximately 22 per cent stronger than those using the worst allocations.

As was pointed out in the study on short staple cottons (3), a valuable practical finding is that comparatively high drafts (20-35) can be employed with the long-draft system when spinning medium and fine yarns (40/1, 60/1, 70/1). It is believed that the industry is presently not taking advantage of this. At present there is a tendency to increase the roving hank of finer yarns. For example, the use of a 5.0-hank roving to spin 60/1 yarn; whereas this study indicates that approximately a 2.0- or 3.0-hank roving would be acceptable for spinning 40/1, 60/1, and 70/1 yarns.

Figure 1 shows that the optimum spinning draft for coarse yarns is low. At the same time, a low draft in spinning decreases the

production at the roving frame. However, it has been shown (1) that yarn strength is the main factor in obtaining high spindle speeds. Therefore, while a low draft in spinning coarse yarns will cut roving production, the increase obtained in yarn strength will enable a higher yarn production. It remains for individual spinners to adjust these two factors to their best advantage.

Acknowledgments

The authors wish to express their appreciation to the following who made this study possible: Herschel W. Little for the experimental design and the evaluation of the analyses of variance in this report; to Wilbur F. McSherry and Shirley M. Reinhardt for making the yarn strength and uniformity tests; to Audrey V. Castillon and Lorraine A. Leitz for making the sliver uniformity tests; to Dorothy C. Legendre and Marilyn M. Smith for the fiber properties tests; and to Cleveland J. Bouquet, Norbert A. Bouquet, Sterling J. Raffray, Pearl A. Varnado, and Raymond J. Pertuit for processing the slivers, rovings, and yarns used in this investigation.

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Tips for quilling filament nylon yarns

Extract*

■ TO HELP mills obtain optimum processing of all Du Pont filament nylon filling yarns and fabric uniformity, the following suggestions concerning yarn take-off, tube caps, quill winding tension, quill selection, quill build, lagging of quills, static, relative humidity, and setting of filling yarns are offered:

Direction of Yarn Take-Off. A small amount of twist may be added to the yarn by utilizing the effect of overend take-off. For maximum twist, overend delivery of yarn from the package and from the quill should be in the same direction. (On most quillers, place tube package with identification up, for this results in a clockwise delivery from the tube and will match that from the quill.)

Tube Caps. A matte finished cap should be placed over the take-off end of the zero twist tube to prevent snagging of the yarn. To prevent yarn damage, only tube caps in good condition should be used.

Static and Relative Humidity. Nylon yarns are most satisfactorily processed under room air conditions of 65 to 75 F and 55% to 65% relative humidity. Du Pont's Type XX5 zero twist nylon yarns plus some of the yarns on bobbins are offered with antistatic finishes which effectively control filament separation caused by static.

Quill Winding Tension. The lowest possible winding tension which will avoid quill shelling during weaving is recommended for all nylon filament yarns. Tension levels of 0.15 to 0.20 gram per denier, measured at the traverse guide, are suggested for deniers up to 260. Position-to-position uniformity of low tension levels is essential to the prevention of quill barré, objectionable quill junctions, tight picks, etc.

Low, uniform quilling tensions can be achieved by use of the following:

1. Properly aligned bobbin or zero twist tube holder.
2. Matte finished tube cap.
3. Balloon guide centered approximately 6 to 8 inches above the supply package.
4. String-up that requires the least number of yarn contact surfaces and fewest possible changes in yarn direction.
5. Matte finished, hard ceramic surface for yarn guides.
6. Compensating tension device.
7. Yarn contact surfaces which are clean and free of nicked, cut, or otherwise damaged surfaces.

Quill Selection. Selection of the proper quill type is important to fabric uniformity. Quills with a low coefficient of surface friction should be used.

Quill Formation. Basic characteristics of quill formation have a direct influence on weaving performance (shelling) and filling yarn uniformity. The following points are of major importance in obtaining good quill formation and weaving performance:

Quill Length—7⅜" quills are recommended for nylon filament yarns.

Diameter—The tendency toward quill shelling increases as the full quill diameter is increased. Optimum diameter is ⅞" to 1⅛".

Stroke—An acceptable stroke length is 1½" or 1¾" for optimum diameter quills. Maximum stability is achieved when front and back tapers are equal.

Tension—0.15 to 0.20 gram per denier measured at the yarn traverse guide is recommended.

Formation—Formation of yarn on quill should be uniform and smooth. Warped quills, and rough, ridgy yarn enrollment cause delivery tension variations which are detrimental to fabric uniformity. Poor quill formation may also contribute to shelling. Knots tied in quilling can cause mechanical quality problems during weaving. The practice of tying knots in filling yarn should therefore be held to a minimum or eliminated entirely.

Lagging of Quills. Sequential winding and weaving of quills is the best route to optimum filling uniformity. Du Pont's Type XX5 zero twist nylon yarns used in conjunction with loom winding equipment such as the "Unifil" is recommended. Conventional quillers pinboarding quills from a single supply package offer the same advantages of uniformity when the quills are stocked into the battery of the loom in the same sequence as they were wound.

A lag time of 24 to 48 hours is recommended for quills that are not wound and woven in sequence from a single supply package. Lagging of quills for a period of 24 to 48 hours allows the yarn retraction forces to approach equilibrium and will greatly assist in improved finished fabric uniformity and improved weaving performance.

Setting of Filling Yarns. Nylon filament filling yarns of high twist levels are sometimes heat-set with steam or moist air to reduce liveliness and improve weaving performance. Heat-setting of these filling yarns should be done on collapsible core packages before quilling.

*From Bulletin N-140, February, 1961, entitled "Quilling Filament Nylon Yarns for Textile Weaving," by Technical Service Section, Textile Fibers Dept., E. I. du Pont de Nemours & Co., Inc.

Clockwise: **D. H. Roberts,** Lydia Cotton Mills, outgoing chairman, conducted the meeting. **Robert Liner,** Greenwood Mills, led discussion on slashing, weaving, and cloth room practices. **E. L. Ramey,** Inman Mills, is the new chairman. **Troy Carter,** Woodside Mills, is new vice-chairman.

From Fiber to Grey Goods

South Carolina mill men discussed problems in processing from opening and picking to weaving and cloth room

Staff report

ABOUT 550 members of the South Carolina Division of the Southern Textile Association met at Clinton, S. C., recently and discussed mill practices from opening through maintenance.

Twenty-four mills answered questions regarding opening through card-room operations. Gross weight of picker laps ranged from 49 to 78.75 pounds, and yards per lap varied from 50.5 to 75. Twenty mills did not have weight printing scales; four mills had this type of equipment. The advantage stated in using this device was that it provides a positive check on uniformity.

A significant majority allowed a tolerance of plus or minus ½ pound in lap weights. One mill allowed plus or minus ¼ pound. Per cent rejects on picker laps ranged from a high of 3% to less than 1%. Most mills reporting allowed about 1% rejects.

Eight out of twenty-four mills reported using high-compression calender rolls on pickers. Five mills indicated an increase in lap weight upon using the calender rolls, and three indicated no increase or failed to specify. Increases varied from 9% to 50%. Diameter of laps among those using high compression calender rolls ran from 16 inches to 19 inches.

Four mills specified that they used conveyors to move picker laps in the mill, and six mills used trucks to move them. Other mills did not mention their method of moving laps.

Eight mills humidify the opening room and maintain relative humidity ranging from 45% to 55%. Of the 24 mills answering these questions, 10 humidified the picker room, and relative humidity was kept at 50-52%. Nine mills check for amount of moisture in laps and take corrective measures for any change noted.

Card Room. Fifteen mills having experience with metallic clothing on cards agreed that nep count was lower and all claimed a production increase (3% was mentioned). Eight mills indicated that metallic clothing had no effect on break factor, uniformity, and ends down, while four reported a slight change (two slightly improved, two slightly decreased).

Eleven mills had an increase in fly with metallic clothing; one reported a decrease, and others said it had no effect. Staple of cotton ranged from 1″ to 1 5/32″ and included M, SM, SLM, and LM. Card production ranged from 5.5 to 13.5 pounds per hour.

Experience with split flats on cards indicated the following advantages: (1) less long staple removed; (2) fewer neps; (3) reduced stripping; (4) less grinding. Others reported no appreciable difference, with pros and cons about evenly divided.

Only four mills had experience with metallic flats. Advantages enumerated include: excellent for fast carding, fiber loss reduced, fewer neps, smaller neps; run over a year without grinding.

Card coilers ranged in size from 12″ to 18″ among the 24 mills taking part in the card room discussion, and these put anywhere from 11.5 to 42 pounds in the cans. Drawing coilers ranged from 12″ to 18″ in size and contained anywhere from 12 to 42.45 pounds when filled. 13 mills transported cans by hand, and eleven moved

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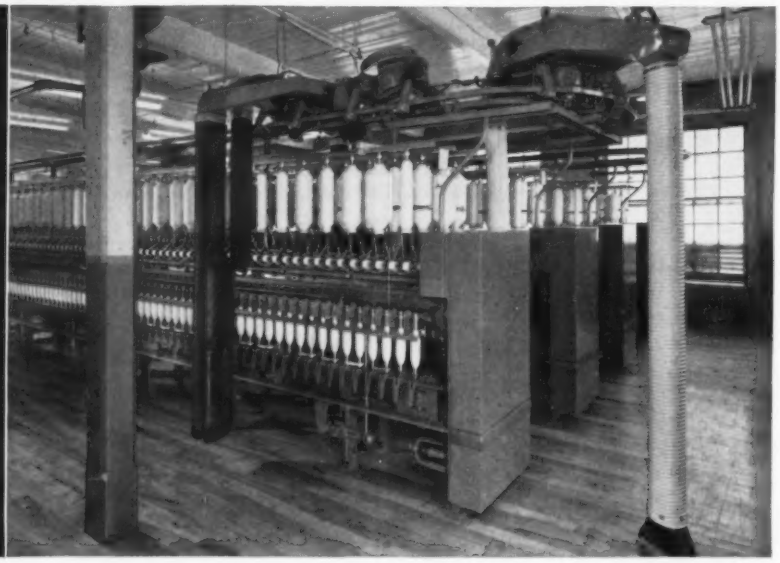

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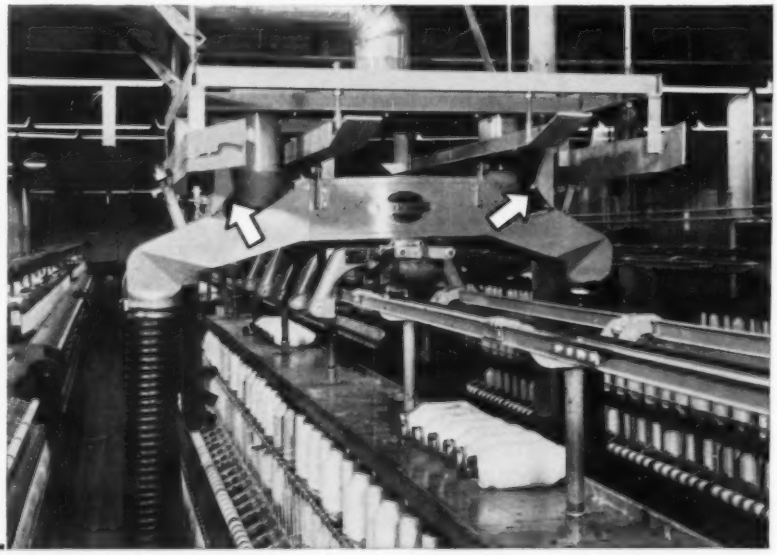

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cans by truck.

Few mills had experience with variable pitch screws. One mill had an increase of 11% in weight of bobbins on three frames so equipped. Another got a 1¾-ounce increase in bobbin weight on a test frame. Three mills could not get the device to operate on their frames.

Experience with overhead cleaners on slubbers was good, although not many mills had experience with it. One statement revealed a 50% reduction in cleaning with a quality improvement. Another mill got better cleaning, better quality, and increased job loads.

No one had any experience to reveal regarding overhead cleaning on drawing.

Runout allowed on steel rolls on roving varied from 0.002″ to 0.005″. Corrections are made upon discovery in most instances. Runout allowed on steel rolls in spinning varied from 0.002″ to 0.005″.

W. M. Pittendreigh, Riegel Textile Corp., led the discussion on opening, picking, and carding.

Spinning. *David R. Meyers*, Joanna Cotton Mills Co., conducted the session on spinning, spooling, and warping. Fourteen mills answered questions on these subjects. The questions were submitted to the mills before the meeting and were discussed at the meeting.

Five mills reported that they could keep floors cleaner with the vacuum floor sweepers on frame cleaners. Nine had no experience with this equipment. The amount of manual sweeping necessary when using vacuum floor sweepers varied. One plant swept manually once every eight hours around the edge of the room. Another swept once every 24 hours around heads and legs of frames. Still another swept once every eight hours across alleys. 75% less sweeping was indicated in one experience, and "one-third of a man" per shift was conserved in labor in another.

Two mills obtained no reduction in cleaning costs, one obtained a 66% reduction, and another got an unspecified reduction in costs.

The buffing cycle on anti-friction top rolls was given as front line, 8 months; back line, 12 months in one instance. Seven plants buffed once every six months, and three buffed every four months. Running cycle between greasing these rolls varied from one year to three years. When replacing cots, methods used to clean shells included compressed air, wire brush, hot water and brush, steel brush on emery wheel, and solvent.

TABLE 1. Causes and Prevention for Paper Tubes Sticking on Spindles

Cause	Preventive Measure
Yarn on spindles	Clean yarn off spindles every four weeks
Rust on spindles	Better humidity control
Moisture on tubes	Keep tubes dry
Tubes jammed on spindles by doffers and spinners	Proper training

Relative humidity used with vacuum end collection systems varied from 41% at 87 F to 50% at 90 F. Nine mills lowered relative humidity 4-10% on changing from scavenger rolls to vacuum end collection.

All those having experience with 12 x 6½ and 14 x 6½ roving random creel these large packages at spinning. Yarn counts in this group ran from 6s to 43s, hank roving from 0.50 to 1.15. Actual package sizes were: 12 x 6, 42.5 ounces; 12 x 6½, 52 ounces; 12 x 6½, 60 ounces; 13½ x 7, 80 ounces. Spinning frames were creeled from boxes in all instances where large package roving was in use, and spinners do the creeling.

Data regarding filling spinning package sizes among the mills reporting are as follows: yarn numbers, 8s to 80s; twist multiplier, 3.25 to 4.19; length of quill, 7⅜″ to 8¾″; diameter of package, 1¼″ to 1⅜″; weight of yarn on package, 0.062 lb (80s) to 0.122 lb (27s); ring diameter, 1⅜″ to 1⅝″.

The causes and preventive measures for paper tubes sticking on spindles are given in *Table 1*.

Results using soft cots indicated an increase in breaking strength among a significant majority (9 out of 12 mills) of those using them. Although there was some difference in practice, the buffing cycle for soft cots was about the same as for regular cots.

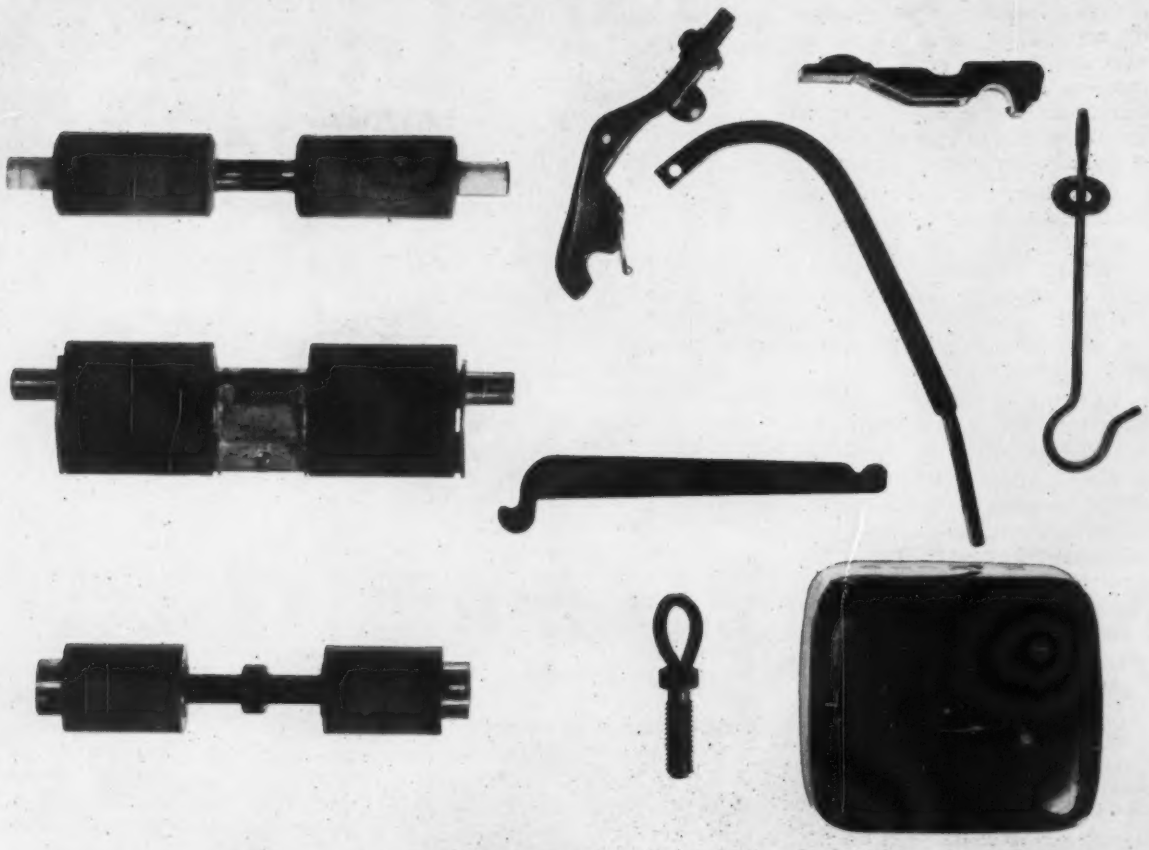
Results with new-type drafting systems were given by several mills. Upon changing from Roth to Duo Roth, break factor increased 7%, and per cent nonuniformity decreased 20%, according to one report. A double apron system gives 10% increase in break factor, 10% decrease in per cent N U, and 25% fewer ends down, with no disadvantages, in one plant. Another experience showed that a double apron with cradle gives stronger and more uniform yarn with fewer ends down. A majority of those reporting favored a double apron system.

The advantage given for "special finish" travelers among the mills using them was "cheaper operating costs." Traveler speeds ranged from 3729 fpm on 31s with a change every 480 hours to 6200 fpm on 40s with a change of travelers every 72 hours (1¾″ ring size). Most others had 2″ rings on 30s to 40s, and one had 2½″ rings on 14s at 5100 fpm traveler speed and a change every 10 days. Everyone agreed that regular travelers could be put back on the rings after using the "special finish" travelers.

Limited experience reported on high speed rings revealed that seven to eight traveler changes were made during break-in. Yarn range was from 26s to 60s with 152 rpm of front roll, 11,000 rpm spindle speed, 6400 fpm traveler speed on the coarse numbers (26s), with 240 hours traveler life and 35 ends down. 187 rpm front roll speed, 72 hours traveler life, and 42 ends down was given for 30s to 60s on high speed rings.

Two mills reported using filling wind on spinning bobbins run on Barber-Colman spoolers. One ran 30s to 60s, 1¾″ ring, 10″ bobbin, 1200 ypm on spooler, 0.1 per cent sloughing, heart cam, reporting

Which is easier to care for...



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Saco-Lowell's MagneDraft* spinning system lets you replace the complicated and cumbersome drafting of conventional systems, shown above at left, with the simple 3-piece assembly, above next page.

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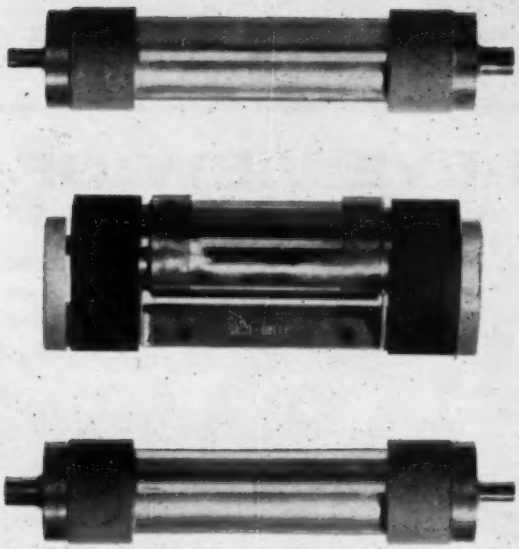

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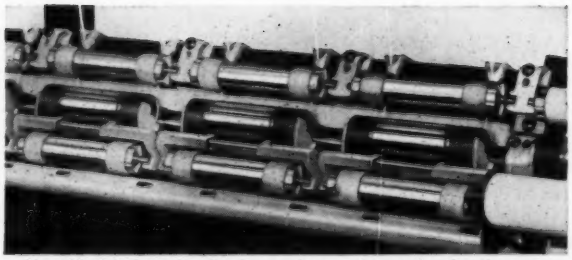

New Model MagneDraft, shown above, wins praise for the convenient end-around piecing its top front roll support permits. Available also in standard model without this feature.

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Fishing is fun to a great many people, and fish is good food, too—pan-fried or any other way. The thing is, you've got to have fish, and that's a conservation problem for all of us. What's the problem? This.

Fish need oxygen to live, just as we do. The oxygen that they breathe is the oxygen which is dissolved in the water, and there is just so much and no more. When untreated waste materials are dumped into streams, a battle takes place for this oxygen, because waste also consumes oxygen in the process of decomposition. Too great an oxygen demand by waste, and the fish lose out. No fish. No fishing. No fish fries. No fun.

There are ways to deal with this problem. One is to allow waste material to decompose in a lagoon, pool, or tank, before allowing it to pass into the stream. Another way, and depending on the waste load of the stream, is to treat waste material so that it decomposes very slowly. That way, the rate of oxygen demand is retarded, and the oxygen requirement of the waste is spread over a larger volume of water.

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six years of experience with this arrangement. Another with filling wind on 31s used a 2″ ring, 10″ bobbin, 1140 ypm, and Whitin Piedmont cam. Ten mills used a combination wind on spinning bobbins run on B-C spoolers and on counts from 9.5s to 62s. One of these used filling wind on counts finer than 49s.

Speeds varied from 1200 ypm on 31s on 9″ bobbin spun on 1⅞″ ring to 1275 ypm on 31s on 9⅜″ bobbin spun on 2″ ring. Low spooler speed was 1000 ypm on 32.5s, 2″ ring, 9″ bobbin, to a high of 1300 ypm on 40s, 2″ ring, 10″ bobbin. Sloughing varied from 0.11% at 1100 ypm on 10s to 21s to a high of 1.8% at 1170 ypm on 30s.

Slashing-Weaving. *Robert Liner,* Greenwood Mills, led the discussion group on slashing, weaving, and cloth room subjects; 11 mills answered questions by mail before the meeting.

Experience with link-type parallels was inconclusive but one mill man said loom speed was increased 12 ppm on 60″ XP looms.

Overhead cleaners in the weave room improved efficiency 2% and improved quality of the cloth, according to a spokesman at the meeting.

In slashing, few of those mills reporting used the same temperature on all cylinders, and can temperatures were maintained at 160-230 F in one instance and up to 260 F in other mills. Some mills run the center cans hottest, while others run back cylinders at highest temperature to obtain as much as 65% of drying on back cylinders.

Those mills answering a question regarding experience with high-temperature starch converters indicated that the advantage lies in being able to use pearl starch and solid compounds in making up size.

The most popular method of checking size viscosity in this group of mills was the viscosimeter, and frequency of checking was given as "continually" in one instance, and in others up to once weekly.

Yardage clocks comprise the most popular method of measuring stretch at the slasher, according to answers submitted by eleven mills. 1¼ to 2½% stretch is considered normal in these mills.

Hardness specified for rubber squeeze rolls varied from 40 to 62 as measured by the Shore Durometer. Rubber rolls are buffed at intervals ranging from three months to six months. Some buff on a time cycle, while others buff on hardness test results.

Harry Barbary, Greenwood Mills, led the maintenance group.

Weaving technique *(from page 87)*

ticular ply, and the fabric is bonded into one homogeneous webbing by rather ingenious use of head motion for the binder warps.

"The looms operate at varying speeds, depending upon the width of the reed space, but speeds correspond rather closely to those attained with standard, single-shuttle looms operating in similar reed spaces.

"The efficiency of weaving by our new process is not quite so great as that attained with a single-deck, multiple-shuttle loom, but the actual increase in production (based on yardage) is on the order of 170 to 185 per cent.

"Comparison of the production runs between the modified double-shuttle looms and single-end needle looms has proven to be favorable to the double-shuttle looms from the standpoint of production per employee hour and from the standpoint of production per dollar of investment. Added to these facts is a much greater flexibility of design in the double-shuttle looms than is possible in the needle looms.

"While a patent has been issued on the method of entering binder warps, we are quite sure that any alert textile technician could duplicate the process in his own mill with a relatively small expenditure and could design a method of harness control for binder warps that would be entirely his own."

Silicone lubricant aids needle-loom weaving of plastics

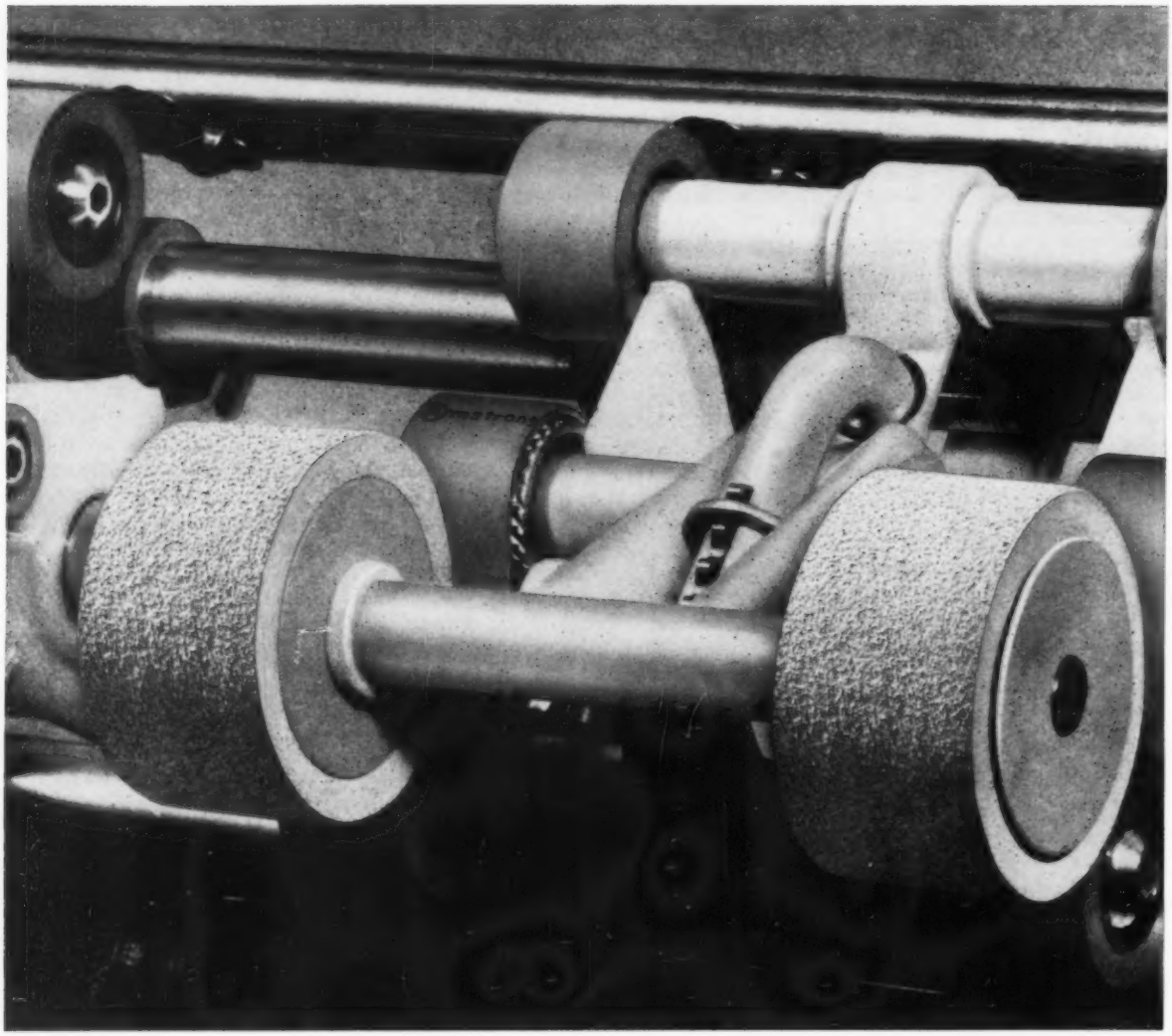
■ SUBSTANTIAL increase in weaving production and reduction of waste through use of "Syl-soft 14" silicone softener emulsion is reported by Bridgeport Fabrics, Inc., Davidson, N. C., producer of narrow plastic fabrics for outdoor lawn furniture.

The silicone emulsion is used to lubricate saran or polypropylene filling yarn, which is whipped back and forth in needle looms across a two-inch band of warp yarn at speeds up to 1100 picks per minute. Nonflammable, the fluid aids in dispersing heat from the needle assembly of the loom and reduces static.

In addition to facilitating high speed weaving, the emulsion keeps the monofilament yarns from fraying by easing the severe abrasive action caused by the almost right angle pick which the Libby shuttleless loom makes while holding the yarn under tension.

DOW CORNING CORP.

Operative uses a hand squeeze bottle to apply directly the silicone emulsion to a cone of filling yarn on a needle loom.



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In addition to these daily operating economies, NK-770 clearers last at least three times as long as conventional materials. Yet their initial cost is no higher. Compare NK-770 side by side with the clearers you are now using. Ask your Armstrong man to arrange a test. Or write Armstrong Cork Company, 6906 Ivy Street, Lancaster, Pa.

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COTTON FIBERS: *How short is short?*

Common sense in measuring and interpreting the amount of short fiber in cotton

by K. L. Hertel
Fiber Research Laboratory
University of Tennessee

Exclusive

THE PRESENCE of short fiber in cotton has always been considered a disadvantage. The sudden introduction of mechanically picked cotton with the attendent increase of trash and consequent lowering of price to the producer brought pressure upon the ginners to install cleaning equipment. It was natural to lay the blame for mill processing difficulties on the cleaned cotton. The only measurable change in the cleaned cotton was sometimes a perceptible increase in the amount of short fiber.

Without showing that the short fibers were the cause of the processor's difficulties or why such a small change in average length should be so detrimental, the short fiber content was branded the "rascal" and the usual correlation coefficients marshalled to prove it.

But how short must a fiber be to be classed a "rascal"? Some said ½ inch and shorter, while others claimed ⅜ inch and shorter. In the rush, short fiber content on a weight basis was adopted as the measure of "rascality." This selection was probably made because sorter methods have high prestige value and not because the measurement was logically sound. Before the approach the textile industry is making runs into difficulties, would it not be well to ask whether the right parameter is being measured?

Pinpointing the "Rascals." The short fiber content problem is so urgent that there is insufficient time to give it adequate study in order that definite answers can be given. Experience and common sense, however, are still at hand and can be applied to the problem.

If it is admitted that short fibers are the "rascals" and cause trouble, one might ask in what way the "rascality" varies with fiber length. Are all fibers shorter than say ½ inch equal in "rascality," as in *Figure 1(a)*, while fibers longer than ½ inch are good fibers with zero "rascality"? Or is the "rascality" proportional to the fiber length up to ½ inch and then zero for those longer as in *Figure 1(b)*?

In (b) a fiber ½ inch long is twice as bad as a ¼ inch fiber and infinitely worse than one 9/16 inch long. In *Figure 1(c)* the long fibers are good fibers, but as fibers become shorter, "rascality" sets in and gets progressively greater with shorter fibers.

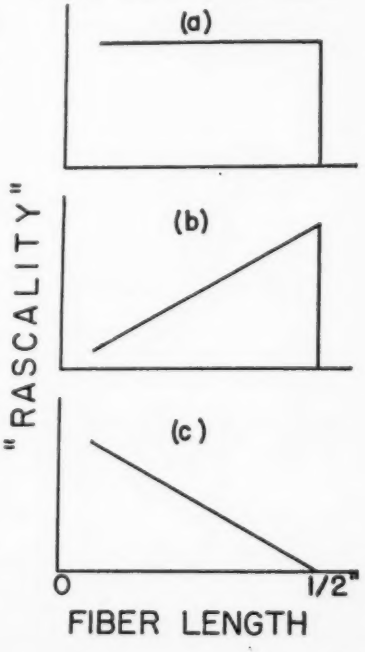
The short fiber content expressed on a weight basis expresses "rascality" as in *Figure 1(b)*. It implies that a ½ inch fiber is twice as bad as a ¼ inch fiber and that "rascality" after coming to a maximum at ½ inch suddenly falls to zero for fibers longer than ½ inch.

Unfortunately, the incompleteness of our knowledge of the role that fiber length plays in textile fabrication prevents a clear-cut decision as to which of the above curves most nearly represents the relative merits of the short and very short fibers. There is, however, an old fashioned notion that short fibers cause trouble particularly in the drafting process because they are out of control or floating too much of the time.

A simple method for estimating the relative number of uncontrolled or floating fibers in 1:1 draft was given at last year's Cotton Research Clinic. Since the method depicts the short fibers much as in *Figure 1(c)*, it seems worthwhile to re-examine this simple method for determining what might be called the "floating fiber" segment.

Floating Fibers in Drafting. The drafting of textile strands in its simplest application can be achieved by two pairs of rolls properly spaced with the entering

FIG. 1. "rascality" vs fiber length.



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Because of its unique combination of strength and inherent stability, Avril rayon is highly compatible when blended with polyester, triacetate and acrylic fibers. Makes possible the spinning of finer yarns, the creation of sheerer, more beautiful fabrics that are comfortable to wear, easy to care for. Avril rayon is the strongest commercial staple ever produced for the textile industry, greatly improves wash and wear performance. Shrink resistant and far stronger than any rayon created today, Avril actually upgrades cotton blends, gives them the look and feel of the finest cotton. As you can see, the applications of Avril rayon are as wide and varied as you want to make them. Before you go any further with the plans for your line... better consider Avril rayon. All indications are this is the one to latch on to. Call Apparel or Home Furnishings Merchandising Department, American Viscose Corporation, 350 Fifth Avenue, New York 1, N.Y., LA 4-7200

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pair running at a slower speed than the exit pair. Since the entering strand or sliver moves slower than the exit sliver, an attenuation takes place between the pairs of rolls.

It is obvious that the spacing between the nips of the pairs of rolls must be greater than the length of the longest fibers to minimize fiber breakage. As the strand or sliver moves through the drafting zone, every fiber is at some time completely between the rolls. Thus every fiber is uncontrolled or floating at some time. At a particular instant, however, many of the fibers are under one or the other pair of rolls, while only a portion of the fibers are entirely within the drafting zone between the pairs of rolls. It is the ratio of the number of fibers which are instantaneously between the rolls to the number in cross section that is designated the floating fiber fraction.

In the floating fiber fraction, the long fibers that happen to be there float for a very short time while a greater proportion of the short fibers are found floating in the drafting zone and they remain for a longer time. The time of floating depends upon the difference between the length of the drafting zone and the length of the fiber. A long fiber is floating for a very short time and even while floating, the leading end is almost wholly surrounded by fast moving fibers, while the trailing end is surrounded by slow moving fibers.

A short fiber, on the other hand, spends more time floating free between the pairs of rolls and also has its ends each surrounded by both fast and slow moving fibers, particularly in the center of the drafting zone. So long as the leading end tends to go faster than the trailing end, the fiber is in tension and aligns itself with the sliver. There will, however, be a certain fraction of the short fibers in which the trailing end will tend to go faster than the leading end, placing the fiber under compression. The result is a crumpled fiber or cross orientation and trouble follows. The tendency to crumple, therefore, will increase rapidly with the decrease of fiber length.

Incidentally, no fibers surrounding the typical fiber are moving slower than the slow roll nor faster than the fast roll, and hence no crumpling action is possible as long as a fiber is either under the slow moving pair or under the fast moving pair. Crumpling is only possible during the fiber's free passage between the two pairs of rolls (or the fiber slips while between a pair of rolls) and then crumpling occurs only when the trailing end tends to move faster than the leading end. The probability of the condition for crumpling or what was termed "rascality" is, of course, very low for the long fiber, but increases rapidly for the short fiber. It follows most nearly *Figure 1 (c)*.

Under actual drafting conditions, the floating fibers move either fast or slow depending upon the surrounding fibers, some of which are themselves floating so that the floating fraction is fluctuating, causing thick and thin places in the sliver. These are imperfections in addition to the crumpling action mentioned above. The fluctuation of the actual floating fiber fraction makes its use for the characterization of a fiber population impracticable. If, however, the draft is reduced the fluctuation is reduced and becomes zero when both pairs of rolls have the same speed.

There is, however, a floating fiber fraction made up of those fibers that have passed the first pair of rolls but have not reached the second pair and, therefore, have both of their ends in the drafting zone between the pairs of rolls. It is this floating fiber fraction that is recommended for use in characterizing a cotton.

It was shown[1] that the proportion of "floating" fibers, f/n, at 1:1 draft is

$$\frac{f}{n} = \frac{S}{L} - 1 + \frac{P}{n}$$

where L is the average length of the fibers, S is the span length and P/n is the fraction that will span the length S. Since it is impracticable to find the length of the longest fiber, that is the minimum value of S for P/n = O, S is measured for a small value of P/n such as 0.025. This value of S is called the 2.5% span length. It is understood, of course, that the drafting roll spacing must be a little greater than this 2.5% span length.

It was also shown[1] that a good approximation to the average length L is given by the secant through 0.150" and the 66.7% point.

$$L = 3(S' - 0.1)$$

where S' is the 66.7% span length assuming 100% at 0.150 inches from the base of the beard. Since the fibrogram differs little from the arc of a circle in this region, the secant will be parallel to a tangent about midpoint or at about 0.26", so that L is the mean length of the fibers longer than 0.26".

The Digital Fibrograph has been designed to read the 2.5% and 66.7% span lengths. It would be relatively simple to add a counter that would read L directly. Although L is an extrapolated value and would not be indicated with an accuracy equal to that attainable for S, it is believed that the floating fiber fraction, f/n, obtained would characterize the fiber length distribution more validly than does the present short fiber content on a weight basis.

When a "Rascal" Is Not a "Rascal." The Digital Fibrograph was employed to measure the short fiber content on a wide range of experimental cottons and some commercial cottons. In addition, data were obtained for 2.5% span length S and 66.7% span length S' in order that the per cent short fiber and the "floating fiber fraction" could be compared on the same samples.

If the two methods are equivalent and are merely different ways of measuring the same property, the correlation coefficient should be substantially unity. The correlation coefficient was 0.9 when the very short cottons were omitted. It is obvious from *Figure 2* that the correlation including the short cottons shown half shaded would be materially decreased. Over a limited range of staple lengths, therefore, either per cent short fiber or "floating fiber fraction" should rank cottons in substantial-

[1]Hertel, K. L., and Craven, C. J., TEXTILE INDUSTRIES 124, 103-107 (July 1960).

1886–1961

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ıy the same order. It is when the measurements are applied over a wide range, that differences should occur.

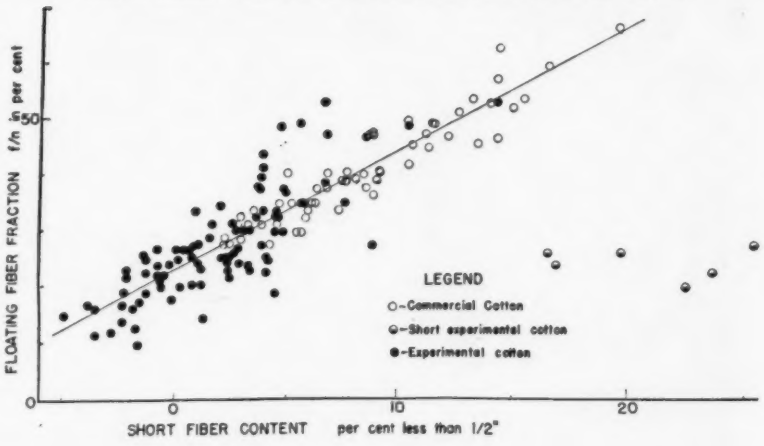
This is another way of saying that per cent of fibers shorter than ½" greatly exaggerates the short fiber content in the short staple cottons, and therefore, is not a good criterion. It might be an adequate criterion if it were the practice to have all drafting roll spacings set the same, whether long or short staple were being drafted. Since, however, the spacing is adjusted to the staple length or the 2.5% span length, a ½" fiber that is useful in a short cotton is a "rascal" when found in a long cotton.

The per cent short fiber measurement has serious limitations and they should be recognized. There is no question but that short fiber in a cotton is a potent disadvantage, but it would be unfortunate to have its numerical value distorted and misinterpreted because it is evaluated by an inappropriate scale of measurement.

The per cent short fiber measurement not only gives a distorted evaluation of the short fiber component, but it is also difficult to determine with satisfactory precision. The geometrical properties of the fibrogram can be made to yield a measure of the per cent of fibers shorter than any designated fiber length. This interpretation is based on the assumption that the fibers are clamped at random and are uniform in size along their length.

In addition the measurement suffers from the extrapolation of a tangent, which in turn magnifies further the deviations caused by non-random clamping and fiber end taper. Although the measurement of the "floating fiber fraction" is not free of the same sources of error, it should be made with better reproducibility and has the added advantage of being a sound, logical criterion responsive to the short fiber increment.

FIG. 2. Floating fiber fraction vs short fiber content in three cottons.



Acknowledgments

The author wishes to thank Mrs. Betty Cash for measuring the cotton samples presented and Miss Reba Lawson for carrying out the calculations. Thanks are also due the Cotton and Cordage Fibers Branch of the Crops Research Division, ARS-USDA, for samples of experimental cottons, and the L. T. Barringer Co. for the commercial samples investigated.

"Our Ten Commandments for Accident Prevention"

by John P. Baum
Vice-President
J. P. Stevens & Co., Inc.

Extract*

■ THE TEN Commandments of our safety program are:

1. Sustained management support and direction
2. An adequate prevention organization
3. Active participation by supervision
4. Effective employee education
5. Control of accident hazards
6. Adequate first aid facilities and medical program
7. Regular inspections to detect unsatisfactory working conditions
8. Investigation of accidents to make certain that corrective measures are taken
9. Create "punch," personality, and warmth in program
10. Maintain active interest in safety "off the job"

*From paper presented at the 1960 National Safety Congress and at the recent one-day safety conference sponsored by the safety committee of the Georgia Textile Manufacturers Association, Inc.

1. **Sustained Management Support and Direction.** Top management and divisional management must maintain a sincere interest in safety and must express a desire and willingness to cooperate with all safety activities. Management actively supports and directs the program to get smooth-flowing production with accident-free people by control of the five M's—namely: men, methods, machines, materials, and money. Management participates to the maximum and thus takes the lead and sets the pace.

The local plant manager is assigned the authority and responsibility for the effective functioning of the accident prevention program. The responsibility for the actual control of accidents is assigned by the local manager to the plant department heads and their supervisors as a part of their regular operating duties.

2. **An Adequate Prevention Organization.** Our safety program is organized and is an integral part of everyday operations. It is a plan or structure that outlines procedures, techniques, and controls that are necessary to prevent accidents.

The local plant manager is responsible for the health and safety of the employees while working in his plant. We say health and safety because you cannot have safety without good

Continued on page 117

Master control station governs synchronized operation of entire liquid polish packaging line. Operator can stop, start, speed up or slow down production at will — avoiding jams or bottlenecks.
The key components of the Syncro-Range Drive —
Adjustable Frequency Power Supply
. . . And Standard or Syncro-Spede Motors!

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Johnson's Wax, renowned wax and polish producer, uses Syncro-Range Drives for exact control of process lines

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The problem was to time the flow of plastic bottles, liquid polish, wool daubers, and caps into the packaging lines at precisely equal rates. Flow rate must be adjustable so the lines can be slowed down or speeded up. And the entire packaging operation must be controllable from a single master control. The Louis Allis Syncro-Range Drive solved the problem.

Syncro-Range Drive provides synchronized speed of any number of motors from a single control. It is a "packaged system" comprising an adjustable frequency power supply operating on 3 phase, 60 cycle power input . . . a group of Syncro-Spede® synchronous motors which maintain exact synchronism regardless of varying load . . . and a control which permits the speed of the entire group of motors to be simply adjusted without losing synchronization. On applications for which exact synchronism is not required, standard squirrel cage motors can be supplied.

You can readily see the advantages of the Syncro-Range Drive in systems or processes which require synchronized movement: multiple conveyors which feed consecutively; transfer lines; process lines; assembly lines requiring coordinated arrival of components; printing where one press feeds another; synthetic fibre spinning, drawing, or twisting; metal runout tables; and other similar machines which require the application of power at a number of points on the machine.

The Syncro-Range Drive is available with a choice of drive sizes to efficiently control from 2 to 200 motors. Control features are available to provide speed regulation accurate to 0.1% with 0% relative speed difference between motors! A trained Louis Allis motor application engineer is available to help. You can reach him at your local Louis Allis District Office, or by writing to The Louis Allis Company, 468 East Stewart Street, Milwaukee 1, Wisconsin.

A15-211

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Keep lift truck upkeep costs down

by **John M. Squier**
Industrial Truck Division
Clark Equipment Co.

Exclusive

THERE seems to be a widespread idea among plant management that the cost of maintaining materials handling equipment is not only a necessary burden, but an uncontrollable one as well. This is not correct.

The experience of a number of companies has proved that over-all costs of equipment maintenance can be lowered, and over-all efficiency raised, when the maintenance department is operated on a businesslike basis. The most effective technique for accomplishing this is an orderly, easily-managed system for keeping and analyzing maintenance records on each piece of handling equipment.

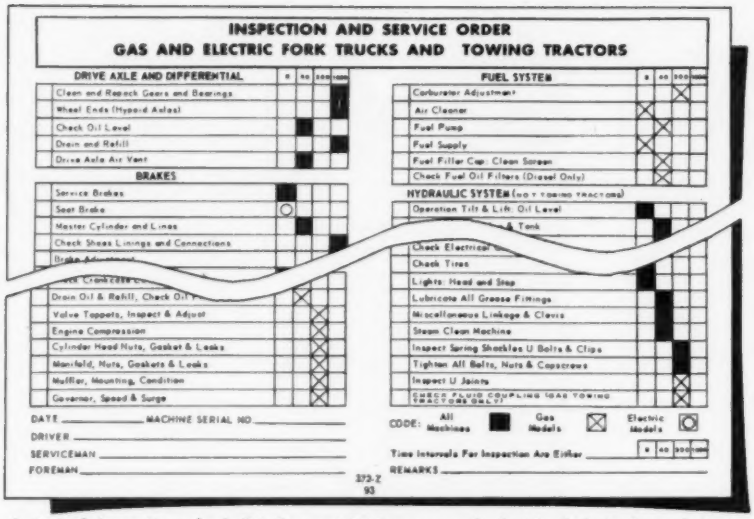
Keeping accurate records on the maintenance and servicing of handling equipment will produce these results:

1. Reduce unscheduled equipment downtime by providing periodic checks in which minor troubles are spotted and corrected before they cause equipment failure

2. Furnish accurate operating costs on each piece of equipment to help management decide whether to replace or overhaul it

3. Increase efficiency of mechanics by providing them with service check lists which will systematize their work

4. Reduce over-all maintenance



INSPECTION AND SERVICE ORDER
GAS AND ELECTRIC FORK TRUCKS AND TOWING TRACTORS

DRIVE AXLE AND DIFFERENTIAL	8	40	500	1000
Clean and Repack Gears and Bearings				■
Wheel Ends (Hypoid Axles)				■
Check Oil Level		■	■	■
Drain and Refill				■
Drive Axle Air Vent		■	■	■
BRAKES				
Service Brakes	■			
Seat Brake	○			
Master Cylinder and Lines		■		
Check Shoes Linings and Connections				■
Brake Adjustment				
Crankcase Oil				
Drain Oil & Refill, Check Oil Filter			■	
Valve Tappets, Inspect & Adjust				■
Engine Compression				■
Cylinder Head Nuts, Gasket & Leaks				■
Manifold, Nuts, Gaskets & Leaks				■
Muffler, Mounting, Condition				■
Governor, Speed & Surge				■

FUEL SYSTEM	8	40	500	1000
Carburetor Adjustment				■
Air Cleaner			■	■
Fuel Pump				■
Fuel Supply				■
Fuel Filter Cup: Clean Screen			■	■
Check Fuel Oil Filters (Diesel Only)			■	■
HYDRAULIC SYSTEM (NOT TOWING TRACTORS)				
Operation Tilt & Lift: Oil Level				■
& Tank				■
Check Electrical				
Check Tires				■
Lights: Head and Stop				■
Lubricate All Grease Fittings				■
Miscellaneous Linkage & Clevis				■
Steam Clean Machine				■
Inspect Spring Shackles U Bolts & Clips				■
Tighten All Bolts, Nuts & Capscrews				■
Inspect U Joints				■
CHECK FLUID COUPLING (GAS TOWING TRACTORS ONLY)				

DATE _____ MACHINE SERIAL NO. _____
DRIVER _____
SERVICEMAN _____
FOREMAN _____

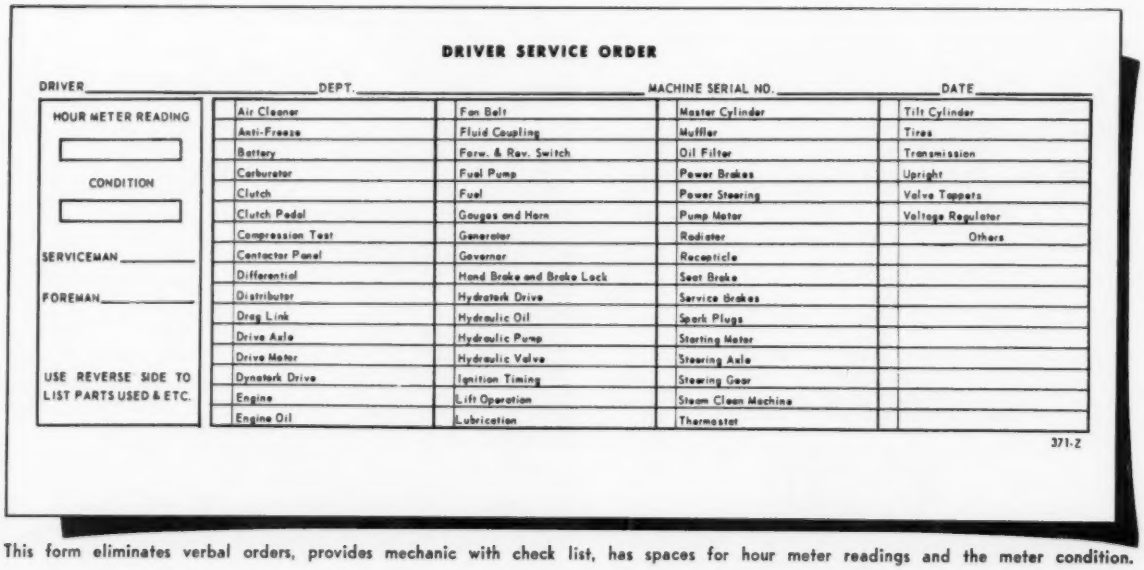
CODE: All Machines ■ Gas Models ⊠ Electric Models ⊡

Time Intervals For Inspection Are Either _____ 8 40 500 1000

REMARKS _____

273-Z
93

A typical inspection check list for maintaining gas and electric fork trucks and towing tractors shows all operations to be performed at 8, 40, 500, and 1000 hours. General areas covered include: drive axle and differential; brakes; clutch or automatic transmission; cooling and electrical systems; engine; fuel and hydraulic systems; steering.



DRIVER SERVICE ORDER

DRIVER _____ DEPT. _____ MACHINE SERIAL NO. _____ DATE _____

HOUR METER READING ☐

CONDITION ☐

SERVICEMAN _____

FOREMAN _____

USE REVERSE SIDE TO LIST PARTS USED & ETC.

☐	Air Cleaner	☐	Fan Belt	☐	Master Cylinder	☐	Tilt Cylinder
☐	Anti-Freeze	☐	Fluid Coupling	☐	Muffler	☐	Tires
☐	Battery	☐	Forw. & Rev. Switch	☐	Oil Filter	☐	Transmission
☐	Carburetor	☐	Fuel Pump	☐	Power Brakes	☐	Upright
☐	Clutch	☐	Fuel	☐	Power Steering	☐	Valve Tappets
☐	Clutch Pedal	☐	Gauges and Horn	☐	Pump Motor	☐	Voltage Regulator
☐	Compression Test	☐	Generator	☐	Radiator		Others
☐	Contactor Panel	☐	Governor	☐	Receptacle		
☐	Differential	☐	Hand Brake and Brake Lock	☐	Seat Brake		
☐	Distributor	☐	Hydrotork Drive	☐	Service Brakes		
☐	Drag Link	☐	Hydraulic Oil	☐	Spark Plugs		
☐	Drive Axle	☐	Hydraulic Pump	☐	Starting Motor		
☐	Drive Motor	☐	Hydraulic Valve	☐	Steering Axle		
☐	Dynatork Drive	☐	Ignition Timing	☐	Steering Gear		
☐	Engine	☐	Lift Operation	☐	Steam Clean Machine		
☐	Engine Oil	☐	Lubrication	☐	Thermostat		

371-Z

This form eliminates verbal orders, provides mechanic with check list, has spaces for hour meter readings and the meter condition.

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"But that's just part of the story. To finishes that are proven and right for the job, Du Pont adds experienced technical help. We'll go right into your mill or plant for a firsthand analysis of your problem. Then, drawing on our own experience and training, we can help you develop a step-by-step program geared to deliver lowest cost per square foot per year!"

Gene Drake, with over 20 years in the field, typifies the men who make up Du Pont's Technical Service Group. Why not call the Du Pont district sales office in your area, and learn how you can slash floor maintenance costs. For detailed information on IMRON Textile Floor Finish, clip and mail the coupon today.

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Finishes Division, Department TI-16
Wilmington 98, Delaware

Please send me, without obligation, fact-filled technical bulletin on IMRON.

Name _____ Title _____

Company _____

Address _____

City _____ Zone ____ State _____

MAINTENANCE PAINTS

DU PONT

Reg. U.S. Pat. Off.

BETTER THINGS FOR BETTER LIVING ... *THROUGH CHEMISTRY*

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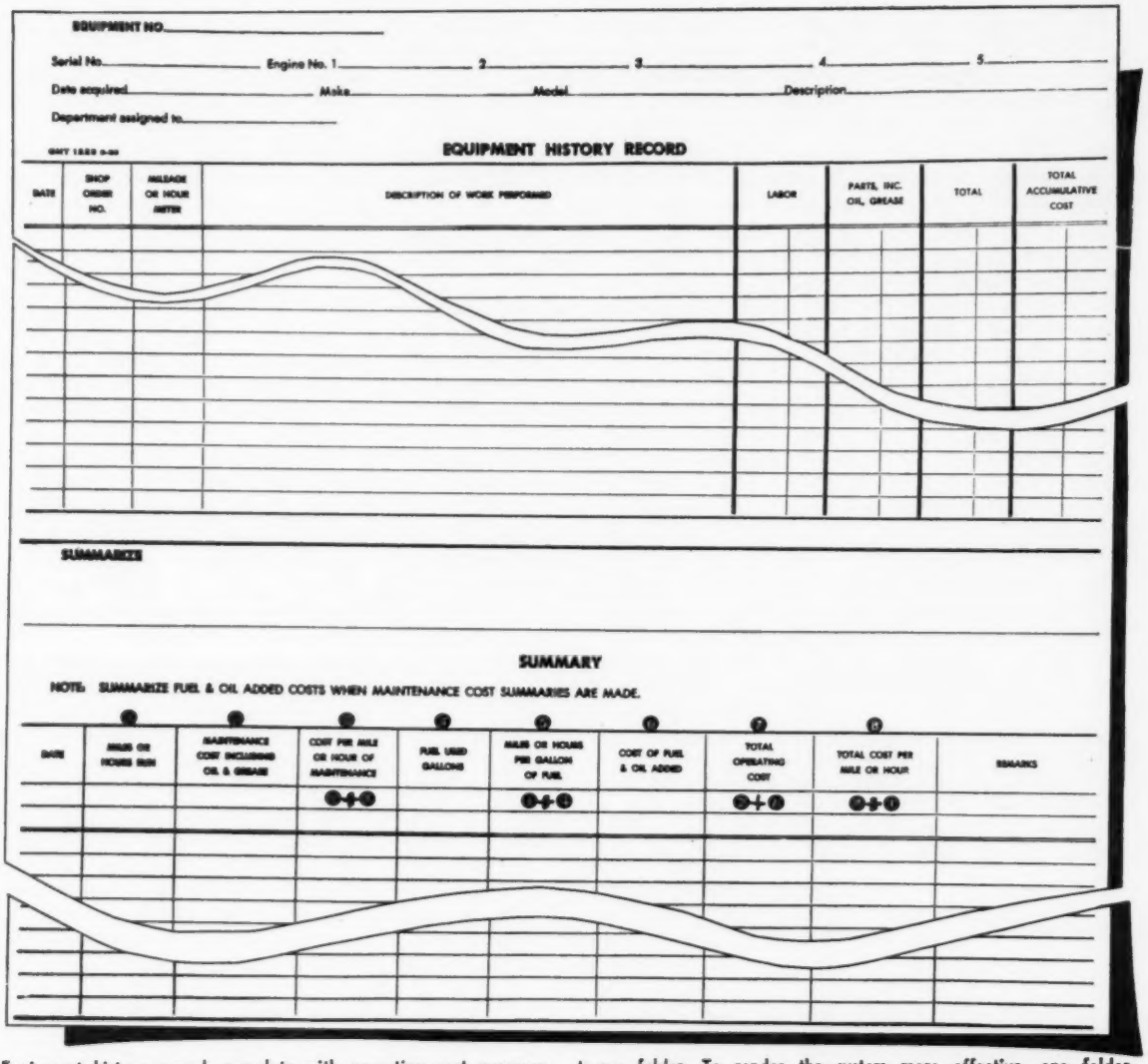


EQUIPMENT NO._____

Serial No._____ Engine No. 1_____ 2_____ 3_____ 4_____ 5_____

Date acquired_____ Make_____ Model_____ Description_____

Department assigned to_____

GMT 1888 0-58

EQUIPMENT HISTORY RECORD

DATE	SHOP ORDER NO.	MILEAGE OR HOUR METER	DESCRIPTION OF WORK PERFORMED	LABOR	PARTS, INC. OIL, GREASE	TOTAL	TOTAL ACCUMULATIVE COST

SUMMARIZE

SUMMARY

NOTE: SUMMARIZE FUEL & OIL ADDED COSTS WHEN MAINTENANCE COST SUMMARIES ARE MADE.

DATE	① MILES OR HOURS RUN	② MAINTENANCE COST INCLUDING OIL & GREASE	③ COST PER MILE OR HOUR OF MAINTENANCE	④ FUEL USED GALLONS	⑤ MILES OR HOURS PER GALLON OF FUEL	⑥ COST OF FUEL & OIL ADDED	⑦ TOTAL OPERATING COST	⑧ TOTAL COST PER MILE OR HOUR	REMARKS
			②÷①		①÷④		②+⑥	⑦÷①	

Equipment history record, complete with operating cost summary, consolidates all pertinent maintenance information in one simple-to-use folder. To render the system more effective, one folder should be kept for each piece of materials handling equipment.

costs by organizing work

5. Provide the purchasing department with a means of accurately forecasting purchases of "normal wear" items.

Equipment Case History. As a successful maintenance program depends on a well-kept record of each machine, such a record should include every bit of information that will insure the wisest use of equipment at the lowest cost. For example:

1. Serial number, capacity, make and type (type of power, attachments, or other distinguishing features should be included)
2. Date machine was placed in service
3. Where and how equipment is used
4. Number of hours or miles logged daily
5. Record of scheduled maintenance, including nature of repairs
6. Record of unscheduled maintenance, including nature of repairs
7. Name of mechanic who serviced equipment
8. Record of time spent on each maintenance operation
9. Record of all parts used—part of number and cost
10. Record of fuel and oil consumed

Hour Meter and Records. A maintenance check list containing the above information should be used at periodic intervals, based upon the number of hours or miles each machine operates. Mainnance schedules will vary with different operations, but inspection and servicing are suggested at four intervals: after 8, 40, 500, and 1000 hours of truck operation.

Since periodic servicing is based upon the hours each machine operates, an hour meter on each piece of materials handling equipment is an indispensable maintenance tool. Supplied by most manufacturers as standard equipment, the hour meter is the main link between records and machines.

Without knowing either the

hours or miles a machines operates, there is no accurate way of determining when basic servicing (oil changes, greasing, battery charging) or major servicing is due.

Knowing the hours, or mileage, equipment is operated enables the maintenance supervisor to consult a service check list to determine the recommended servicing due on a particular piece of equipment.

These check lists can be established by plant personnel, based on individual plant experience and problems, but it is usually wise to consult with the equipment manufacturer for factory recommendations.

Most manufacturers have published check lists (such as the one illustrated in this article) for use as a basis for setting up individual lists. Manufacturers or their dealers will gladly furnish this information.

Often individual plants have peculiar operating conditions which require special tailoring of check lists. In such cases, the manufacturer can help by surveying the operation and making specific recommendations. Some plants use a driver service order in addition to check lists.

How To Keep Records. Since record keeping usually is done by the mechanic, the forms and check lists used should systematize his work, make it easy to record data, and thus make his job easier. Methods of keeping maintenance records should not be complicated. In fact, the simpler the method, the better.

Record keeping systems vary according to individual plant operations or preferences of service personnel. One plant uses a service log attached to each machine. Another company records maintenance information on cards used with an elaborate electronic data processing setup.

Regardless of technique, the most important requirement of any record keeping system is that the records are *kept* and that complete maintenance information on each machine is centralized and easily accessible.

Once record keeping has been established, maintenance personnel should be supervised to insure that all requested information is recorded.

Evaluate Existing Records. However, it's important that the maintenance records provide all necessary information for evaluating the entire materials handling operation from a cost standpoint.

To determine if these records are complete, examine them and ask these four questions:

1. Do records show when machines were purchased and how many hours or miles per month each unit operates?

2. Do records provide an accurate account of money spent on each machine for maintenance and fuel?

3. Does maintenance department have a check list of major points to inspect at each daily, weekly, and other servicing period?

4. Is all unscheduled downtime reported accurately (so responsibility for it can be fixed)?

If each of the foregoing questions can be answered affirmatively, then chances are the maintenance program is functioning well.

No maintenance program is so complete that it will eliminate breakdowns entirely, but a well-administered program can reduce unscheduled equipment downtime to a minimum. Good record keeping enables a supervisor to fix responsibility, since the mechanic's name who did the work appears on the maintenance report.

A properly supervised and documentated maintenance program is one of the best possible investments of management time when contrasted with the high costs of unscheduled downtime and disorganized maintenance.

"Greater things to come" in textile technology—Erwin

■ "TEXTILE technology, far from being moribund, is alive, is growing in strength and knowledge, and offers a real promise of greater things to come," William J. Erwin, president of Dan River Mills, Inc., Danville, Va., told the National Federation of Financial Analyst Societies.

Answering his own question, "What lies ahead in the industry's quest for technological progress?," Mr. Erwin said:

"First, there is a strong possibility that the industry is on the threshold of revolutionary developments in its technology. Most of the new machinery available to date, while vastly improved over the equipment it replaces, represents a refinement of equipment in use for generations, but this is changing.

"One radical departure is the shuttleless loom. [These looms] are not, in their present stage of development, the perfect instrument for transforming yarn into cloth—and in particular they are lacking in versatility. Nevertheless, they offer many advantages over conventional looms and, as refinements are made, will become more flexible and more efficient . . . Another is the automated spinning mill . . . Still another is the automated doffing machine . . .

"Second, in the quest for technological progress, there is every indication the industry will enlarge its research and development effort. The trend in the past few years in this direction has been apparent; I foresee no reversal in the trend. . .

"Third—and this is fundamental to the first two—there is a growing conviction among leaders in the textile industry that technological progress must be accelerated in the decade ahead. To compete with other companies within the industry, to compete with other industries encroaching on textiles' traditional markets, and to compete with foreign textile producers, industry leaders know they must move to unprecedented levels of efficiency and performance.

Unfortunately, there is often a wide gap between conviction that a task needs doing and its actual accomplishment. Whether the textile industry will realize its goals will depend in large measure on the ability to finance the technological progress the engineers and chemists have made possible . . ."

SUPPLIER NOTES

(from page 55)

A realignment of the fiber marketing sales organization has been announced by **Allied Chemical Corp.** James P. Connelly has joined the firm as manager of marketing, apparel. Robert E. Mulcahy has been named manager of marketing, industrial. * * * A new sales office is to be opened in Akron, Ohio. * * * William A. Richardson has been named regional sales manager for Greensboro, N. C.

R. C. Gilardi has been appointed manager of the western district for **Air Reduction Chemical and Carbide Co.** William F. Lehr has been named eastern manager. John V. Kaine has become manager of the central district. S. E. Warner has been appointed branch manager at Tampa, Fla.

Textile Machine Works has announced the acquisition of **J. L. Ferguson Co.,** manufacturers of packaging machinery.

The Chicago branch office of The Chemical Group, a division of **General Aniline & Film Corp.,** has been relocated to 1950 N. Hawthorne Ave. The building houses the office, customer - service - laboratory, and warehouse serving the Chicago branch territory.

Harold P. Monica has been named director of sales for the industrial division of **L. H. Shingle Co.** Mr. Monica is headquartered in Worcester, Mass.

W. Andy King has been appointed sales representative in the South Carolina area for **Clinton Corn Processing Co.**

A new firm, **Kim-Tex Chemical Co.,** has been formed in Spartanburg, S. C., by K. T. Moore.

A sales, service, and rental branch office of the Baker Industrial Trucks division of the **Otis Elevator Co.,** has been opened at 262 Rio Circle, Decatur, Ga. Marshall Dreitzler is branch manager.

Under an agreement between **Celanese Corp. of America** and **Farbwerke Hoechst AG** of Germany, nytril fiber will be produced in Europe by Bobina Faserwerke GmbH and marketed there by Hoechst. Production is expected during the first quarter of 1962.

A new display and demonstration plant is being constructed in Spartanburg, S. C., for **Hobourn Sales, Inc.**

Parker N. Wheeler has been named vice-president of sales, and S. Maxwell Bishop has been appointed comptroller for **The Felters Co.**

Donald Macfarlan has been appointed sales manager of inorganic chemicals for **Pennsalt Chemicals Corp.** Donald A. King has been named product manager.

L. E. Doxie has been named to take over the executive responsibilities of the corn division of the **A. E. Staley Manufacturing Co.**

A new two-part slide film showing how to keep electric Clarklift fork trucks in top operating condition is available from industrial truck dealers of **Clark Equipment Co.**

Wallace R. Irwin, Ira S. Hurd, and an associated group have purchased **Moretex Chemical Products, Inc.,** from the Moreland Chemical Co.

Allen F. Barney has been named director of advertising for the textile, international, and replacement parts divisions of **Saco-Lowell Shops.** Mr. Barney was formerly advertising manager for the Warner & Swasey Co. * * * The firm has announced the sale of 16 high production combers and 32 deliveries of 3 over 4 Versa-Matic drawing to Textiles, Inc., for installation in the Arlington, plant, Gastonia, N. C.

The transfer of Lestershire textile bobbin manufacturing facilities in Johnson City, New York, to the company's new Hartwell, Georgia, location has been announced by **National Vulcanized Fibre Co.** There will be no change in sales and distribution and the name "Lestershire" will be retained.

Allen H. Douglas has joined the **Trust Company of Georgia** to establish and manage an industrial development department. Mr. Douglas will devote his entire time to efforts to attract industry to Georgia, and the development of industry in the state-at-large.

The Chlor-Alkali division of **Food Machinery and Chemical Corp.** has named William M. Clark sales manager for the southern district with headquarters in Charlotte, N. C. William D. Neese has been ap-

THE WORLD'S FINEST

POSITIVE-LATCHING BALL BEARING

BOBBIN HOLDER

HOLDER 44¢
ANY NUT 01¢
BRAKE 05¢

50¢

- Easy tripping — Freest running — Bullet-nosed
- Faster for Operator
- Stainless steel balls and races—No rust drag
- The only thoroughly sealed ball assembly. Prevents lint drag
- Short travel—Requires low headroom
- Wide smooth fingers—Prevents cutting of bobbin inner edges
- Serviced for life at assembly and riveted
- Streamlined die cast and stamped brakes. Six sizes available.
- Shipped assembled
- Finest bobbin holder available at any price
- Available for any size bobbin or rail thru:

Saco-Lowell; Bouligny; Bahnson; Parks-Cramer; Pneumafil; Coleman Co.; Cotton-McCauley; C. A. McAbee; Matthews Equipment Co.

Patented, Manufactured and Guaranteed
WHITEHEAD DIE CASTING CO.
1198 ZONOLITE ROAD—ATLANTA 6, GA.

going to Milwaukee?

the "downtown" location for businessmen, group meetings, or vacationists is at Michigan St. at Plankinton. Only downtown hotel with air-cond. guest rooms.

- Family rates • 3 fine restaurants • AAA recommended
- garage and parking lot adjacent
- close to the Stadium & Public Auditorium from $6.50

BR 1-0260

James J. Stack, Gen. Mgr.

stay at the PLANKINTON HOUSE

CLASSIFIED

DEVELOPMENT MAN

SURGICAL DRESSINGS MANUFACTURING PLANT HAS AN OPENING FOR A YOUNG MAN TO ORGANIZE AND DIRECT PRODUCT AND PACKAGE DEVELOPMENT ACTIVITIES. THIS WILL INVOLVE KNOWLEDGE OF MARKET REQUIREMENTS AND THE ABILITY TO COME UP WITH IDEAS FOR NEW PRODUCTS AND NEW APPLICATIONS AND IMPROVEMENTS OF EXISTING ONES. TRAINING IN CHEMISTRY AND SOME KNOWLEDGE OF ADHESIVES DESIRABLE. ACTUAL LABORATORY AND PILOT WORK WILL BE INVOLVED. A LEANING TOWARDS MACHINE DEVELOPMENT, OR AT LEAST AN UNDERSTANDING OF MECHANICAL EQUIPMENT PRODUCTION PROBLEMS, WOULD BE USEFUL. THIS POSITION SHOULD OFFER A CHALLENGE TO A YOUNG MAN WITH FIVE TO TEN YEARS ACTUAL EXPERIENCE IN DEVELOPMENT OF SURGICAL DRESSINGS TO HEAD UP AND GROW WITH THIS DEPARTMENT. SEND COMPLETE RESUME, INCLUDING SALARY REQUIREMENTS, TO BOX 119, TEXTILE INDUSTRIES, 1760 PEACHTREE RD., N.W., ATLANTA, GA.

PRECISION PIN PLATES

New and Repinning
for all makes tenters
domestic and foreign
K-monel and steel pins
special finish for carbonizing
Send sample plates for quotation.

SOUTHERN TEXTILE WORKS
P. O. Box 406 202 South Towers St
Anderson, South Carolina

BOBBINS—BOBBINS—BOBBINS

Our specialty is good used automatic loom bobbins. We also deal in twister and roving bobbins. Send us samples of what you need or what surplus bobbins you have.

CHARLES G. STOVER COMPANY
West Point, Georgia

POSITION WANTED BY MAN AGE 44, QUALIFIED AND EXPERIENCED AS OVERSEER WEAVING, PREPARATION, DESIGNING AND PRODUCTION CONTROL, WILLING TO TRAVEL, RELOCATE. BOX 120, TEXTILE INDUSTRIES, 1760 PEACHTREE RD., N.W., ATLANTA, GEORGIA.

WANTED

Shorts, remnants and seconds of printed fabrics and colored yarn goods in lots up to 5,000 yards. Reply Box 118, Textile Industries, 1760 Peactree Rd., N. W., Atlanta 9, Ga.

COMMISSION WEAVING WANTED

We have the experience, the know-how, and 48 dobby-equipped, 20-harness, 4 x 1 box looms to weave up to 42" goods. Reply TEXTILE INDUSTRIES, BOX 117, 1760 Peachtree Rd. N.W., Atlanta, Ga.

SUPPLIER NOTES

(from page 115)

pointed sales manager for the mid-southern district with headquarters at Cincinnati, Ohio.

At the annual meeting of the stockholders of the **Whitin Machine Works,** John H. Bolton, Jr., R. I. Dalton, R. I. Dalton, Jr., B. C. Grieb, and Harry Moss were elected vice-presidents. * * * Whitin Machine Works has announced the receipt of orders for thirty-five 288 spindle, 4" gauge frames, 36" wide for installation in the Catherine plant of Avondale Mills. Twenty-one Model F5 Superflex frames, 240 spindles, 4" gauge, 36" wide will be installed at the Pell City plant. * * * The two-delivery drawing frame recently announced by Whitin (see page 166, of this issue), will be produced by the company's subsidiary plant, Fayscott Landis Machine Corp., in Dexter, Maine, where the work of tooling up for regular production is now under way. It is anticipated that some deliveries may begin in the summer or early fall against orders already taken. * * * The automatic doffing system for spinning frames developed by Deering Milliken Research Corp. (TI for April, 1961, page 78) is to be marketed under the name of "Audomac" (automatic doffing, monitoring, and cleaning), according to Whitin, the firm recently licensed to manufacture and market the equipment. Plans for manufacture and production of the Audomac are progressing satisfactorily, Whitin officials said, and it is anticipated that units will be delivered early this fall against orders already placed.

Joe A. Williams has been newly assigned to represent the **Louis P. Batson Co.** in portions of North Carolina, South Carolina, and northeastern Georgia. John S. Flowe has joined the sales staff and will call on the trade in eastern North Carolina and eastern Virginia. * * * Controlling interest of the Batson Manufacturing Co. has been purchased by Harry M. Thompson. The firm will continue to operate under the same name, and Louis P. Batson Co. will continue as representatives for the firm.

Chester L. Jones, director of sales, resin products, has been promoted to assistant director of marketing in the Plastics division of **Monsanto Chemical Co.** Edmond S. Bauer, product administrator of resins and coatings, has been named to succeed Mr. Jones.

Mr. Wheeler
Ludell Mfg.

Mr. Williams
Louis Batson

Mr. Martin
Roberts Co.

Mr. Colvin
B. F. Goodrich

Southern Airways of Florida has established a radio shop at the Orlando (Fla.) Municipal airport. Woodrow F. Dunlap is manager.

J. Carlile Martin has joined **Roberts Company** as a special representative in the technical sales service department.

Thomas W. Carmody has been appointed sales manager of **Union Carbide Olefins Co.**

Robert E. Colvin has been named Atlanta district manager for **B. F. Goodrich Industrial Products Co.,** a division of The B. F. Goodrich Co.

Fred Wheeler has joined the sales staff of **Ludell Mfg. Co.** Mr. Wheeler will service textile industries in the New England area.

Jack A. Roddy has been appointed a technical representative for **Alliance Chemical Corp.** for the territory of South Carolina, Georgia, and Alabama.

In a realignment of the industrial marketing organization of the **General Electric Co.,** Charles B. Elledge has been named manager of industrial sales and engineering.

Singer-Cobble, Inc., through its British subsidiary, Cobble Bros. Machinery Co., Ltd., has purchased **British Tufting Machinery, Ltd.**

For further information use Handy Return Card, Page 187

Ten commandments

(from page 109)

health. A man must be in good physical condition if he is to perform effectively, do a full productive job, and work a full eight hours per day in a safe manner.

All plants have a Central Safety Committee which includes the manager, superintendent, assistant superintendent, nurse, personnel manager, department heads, and supervisors. Employees are picked from each department on each shift to serve on the departmental safety committee on a rotating basis so that all are given the opportunity to participate actively toward the success of the plant safety team.

It is important for employees who work on the second and third shifts to participate in safety committee meetings, as these employees have firsthand knowledge of the extra hazards which are created at night. These hazards are often overlooked by those who only work during the daylight hours.

3. **Active Participation by Supervision.** The supervisor is the member of management who is nearest the worker and should be the best informed as to correct operating methods and unsafe operating conditions. He has the responsibility for the actual control of accidents.

4. **Effective Employee Education.** Much of the safety of employees depends on their own conduct; therefore, much effort is directed toward the education and indoctrination of a new employee on a new job. He is thoroughly instructed regarding the company's policy on accident prevention, its safety program and the facilities and safety equipment provided.

Each employee is told positively that no individual is expected to perform a task that appears to be unsafe. He is told that he will not proceed on a job without instructions as to the safest method of accomplishing it. In our opinion, this is one of the strongest features of our accident prevention program.

5. **Control of Accident Hazards.** Since machine accidents are usually the most severe accidents, machine protection with proper guarding and good lighting is an important part of our safety program. Recommendations made by the individual responsible for safety program, safety committee, supervisors, and our insurance carrier's safety engineer are thoroughly discussed and carefully considered in order to assure that all feasible precautions are taken to safeguard adequately our machinery and equipment.

Plants are maintained in a manner so as to render them as safe as possible. Good housekeeping practices must be followed at all times.

Our aim is to eliminate or reduce hazardous conditions insofar as scientifically possible and to provide personal protective equipment and to see that it is used and maintained where needed.

6. **Adequate First Aid Facilities and Medical Program.** Adequate first aid facilities are furnished the employee for keeping him healthy and on the job so that he can meet his work requirements and avoid injury and thus maintain his productiveness. When sickness or injury does occur to an employee on the job, facilities and personnel are provided for immediate medical attention.

7. **Regular Inspections to Detect Unsatisfactory Working Conditions.** Regular inspections are made at least once a month prior to the meeting of the Plant Safety Committee, and the results are reported at the meeting. These inspections are extremely important in the removal or control of unsafe working practices and the elimination of unsafe working conditions. These inspections are thorough —written reports are rendered—and follow-up is mandatory. Particular attention is paid to any suggestion which is made by any non-supervisory member of the inspection team.

8. **Investigation of Accidents to Make Certain That Corrective Measures Are Taken.** It is academic that when an accident does occur there can be only one good thing about it and that is to determine the cause so as to establish controls to prevent it from happening again. We capitalize on the old saying "profit by experience."

We are most careful not to place blame nor embarrass our employees in investigations, but rather to determine responsibility for control and reduce, or eliminate, if possible, any hazard that does exist.

9. **Create "Punch," Personality, and Warmth in Program.** Safety is real. Safety is human. Our middle management people give the program drive and keep it alive by associating with it a personality which is essentially Stevens. In our opinion, any successful program of this nature must have at its very core a sincere, genuine, personal interest in the welfare and well being of the individual employee by each echelon of plant management—particularly interest by the employee's immediate supervisor. Any indication of nonsincerity or lackadaisical interest in the program by management would surely doom it to failure.

10. **Maintain Active Interest in Safety "Off the Job."** Although our primary consideration is accident prevention while the employee is on the job, we are interested in his welfare when he is "off the job." It matters not where he is injured, his loss to his family and to our production team is just the same.

Safety programs, especially at vacation time, emphasize the importance of safe practices not only while at work but also while at play. We are also proud to feel that we are making a significant effort toward reducing the annual toll of death and destruction resulting from traffic accidents. Participation and support in community safety projects in the areas where we have plant operations is also of vital importance.

FORESIGHT
CAN SAVE YOU . . .
MONEY!

ANDERSON SHIELDS

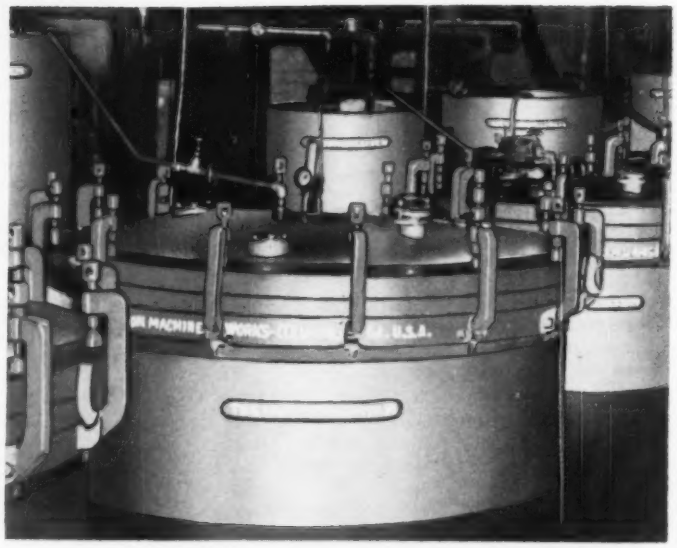
will reduce . . .
CHIPPING — SPLITTING
BREAKING
of your . . .
SPOOLS AND BOBBINS

Send Us Your Problems:
We Will Cooperate
— To Save You Money.

TEXTILE SHIELD CO., INC.
LAWRENCE, MASS., U.S.A.
SERVING NEW ENGLAND SINCE 1917

They Don't Make Dyeing Machines Like they Used to...

At Least MORTON Doesn't!



Modern Morton System Dyeing and Drying Machinery is always a step ahead of tomorrow.

Rugged, dependable, automatically controlled Morton equipment assures you of level shades and high efficiency at temperatures up to 300° F.

Morton's skilled engineers can help you with your specialized problems, and a complete Morton system means a continuing profitable operation for your plant.

Write or call the Morton representative in your area today!

MORTON

MACHINE WORKS, Inc.

FOUNDED BY STONEWALL JACKSON

Columbus — THE MORTON SYSTEM — Georgia, USA

MANUFACTURERS OF PATENTED DYEING AND BLEACHING MACHINERY • DRYING MACHINES • DYE BEAMS • STAINLESS STEEL TANKS • MORTON PUMPS • VALVES • FITTINGS • MILL SUPPLIES

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Greenville, S. C.

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316 Spencer St.
Philadelphia 20, Pa.

For further information use Handy Return Card, Page 187

WET PROCESSING

4,000,000 yards of quality

Dan River keynotes quality in each of the 4,000,000 yards finished weekly

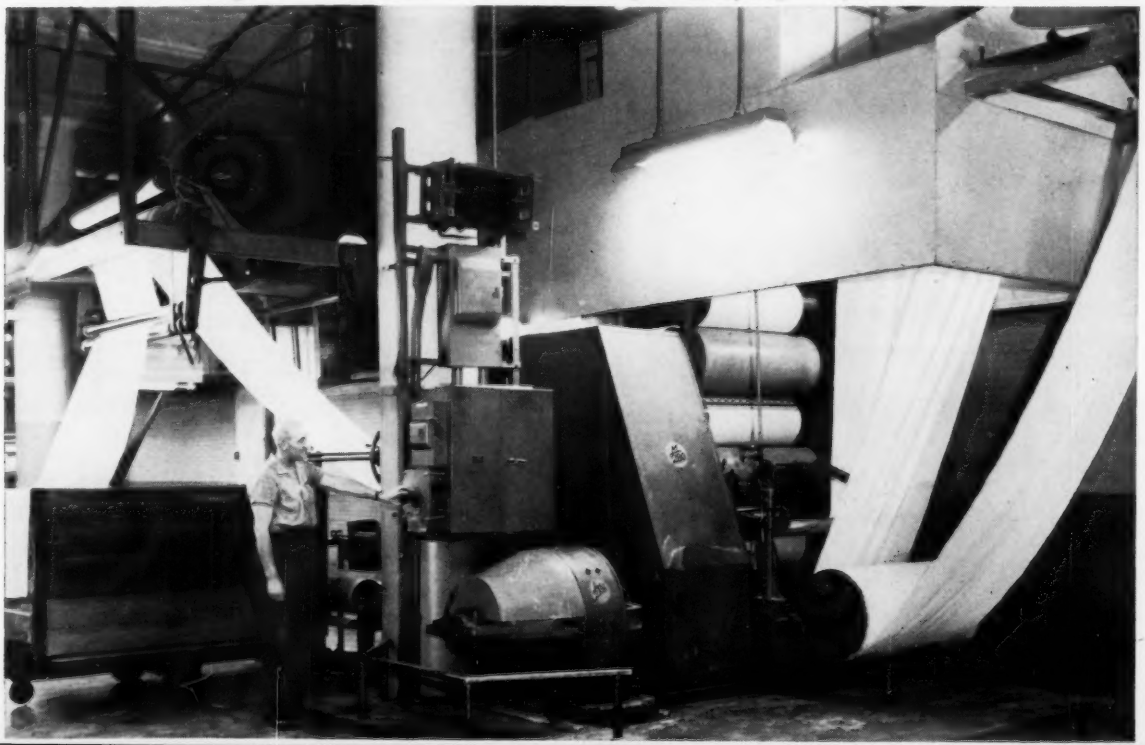
Staff prepared Exclusive

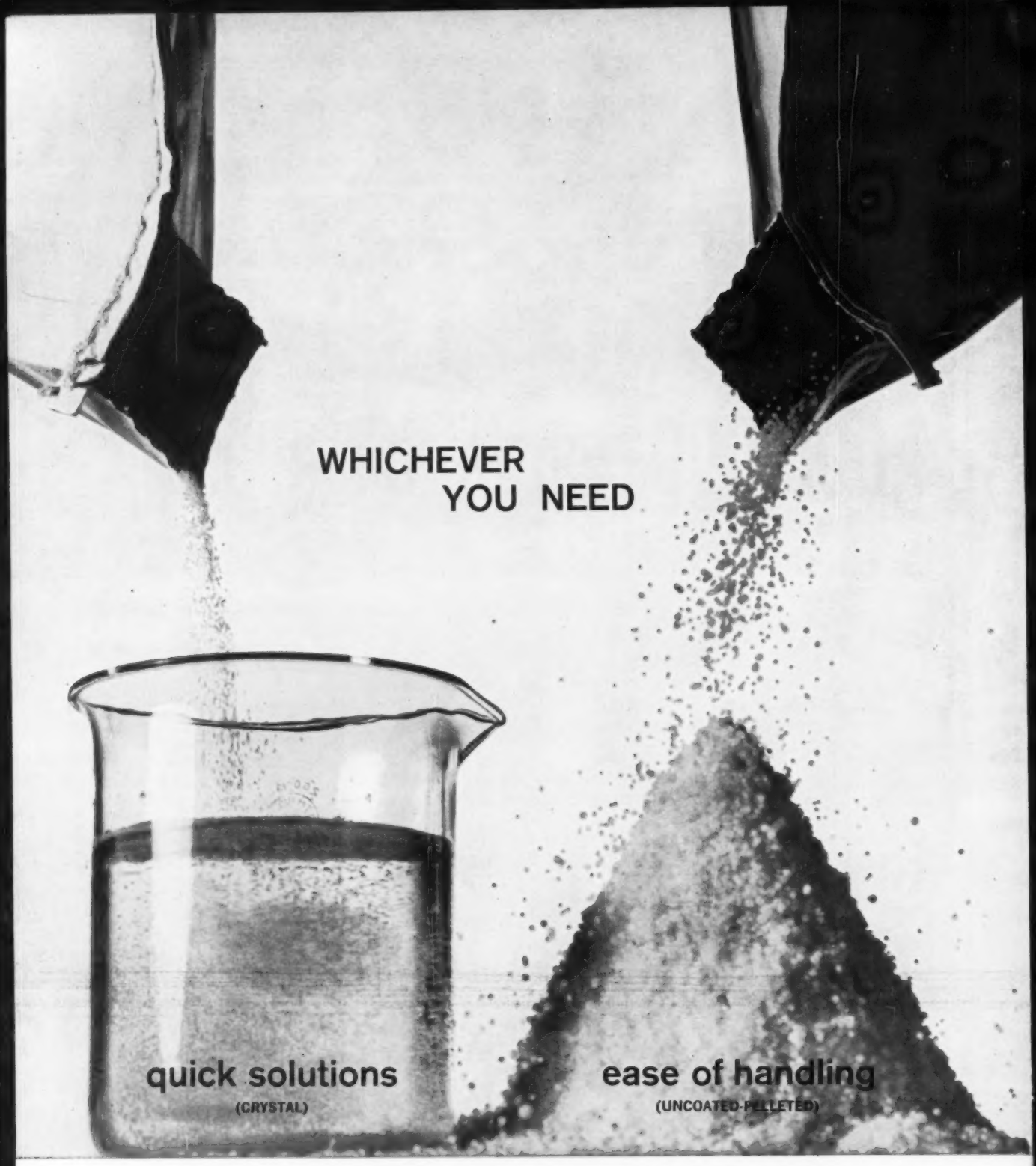
QUALITY control, which gets special emphasis at Dan River Mills' finishing plant, actually begins with the purchase of the raw cotton and continues until the cloth is packed and shipped to the customer. In the finishing plant, therefore, chemical and visual controls are put into effect as soon as the cloth begins its travels through the bleach house.

At first, of course, the cloth is in rope form, making visual inspection impossible. However, chemical concentrations, time of immersion, and temperatures are constantly checked by range operators and (at less frequent intervals) by a representative of the in-plant laboratory.

After its passage through the bleach ranges, the cloth is opened and dried on dry cans and it is here that it gets its first visual inspection. Thereafter, through mercerizing, drying, dyeing, finishing and pre-shrinking, every lot of

Oxford cloth being run on a chase calender. This is a critical operation, requiring the operative's closest attention.



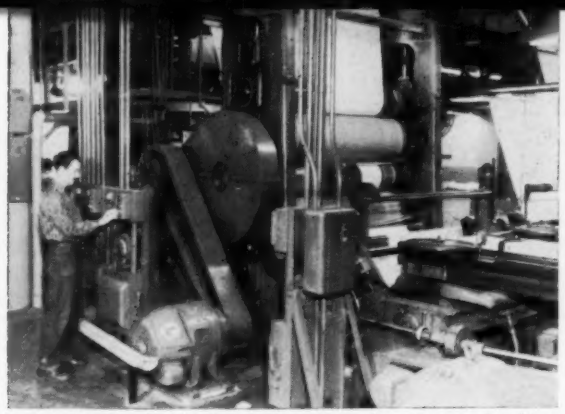


order your UREA from Allied Chemical

BASIC TO AMERICA'S PROGRESS

Allied Chemical

NITROGEN DIVISION
Dept. U8-29-I, 40 Rector St., New York 6, N. Y.



Tenter frame and calender operate in tandem to save batching.

Electronics control the J-boxes, washers of the bleaching range.

cloth is carefully inspected and defects removed where this is possible.

This matter of inspection, though of importance at each succeeding stage, is particularly advantageous early in the game, for once resin finishes have been applied (and 90-95% of all Dan River fabrics are finished with resins) it becomes extremely difficult to remove dirt, grease, and other such defects which are easily removable before resins have been cured into the cloth.

After the goods have been finished, they are rope-soaked to remove resin odors, and here also sample yards are cut and sent to the control laboratory where a variety of special tests are run for tensile and tear strength, crease resistance, etc.

In the final production stage, that of compressive shrinking, a sample of cloth is removed from each lot as it comes from the finishing department and is tested for residual shrinkage. This test is repeated after the cloth has been pre-shrunk.

The cloth is then released to finish inspection where a receiving clerk checks each lot for correct yardage, shade, finish (hand), and appearance. If everything is found to be in order, the cloth is passed to trained inspectors who check each yard for both grey and finishing defects, using a point system to guarantee a high level of uniform quality.

Cloth not up to Dan River's high standard is returned to the proper stage to be reworked, while much of the first quality cloth is spot checked before it leaves finish inspection to be absolutely certain that previous inspections have been performed satisfactorily.

Finally, the cloth goes to a shade room where it is shaded by experts under special lights so that each customer will receive goods of uniform shades. Here again, the cloth is spot checked for shade, correct style and pattern, yardage, and the proper number of pieces invoiced to a customer.

This completes the control of quality in the finishing mill. At Dan River, however, in addition to the regular inspections described above, a special quality control department is set up to spot check both grey and finished cloth in order to be certain that previous inspections have not failed in any respect.

At least 100,000 yards of both grey and finished cloth are spot checked by this department each week, and when defects are found, they are immediately brought to the attention of the proper department and to the in-plant inspection departments. In this way, Dan River Mills can almost guarantee customer satisfaction at all times.

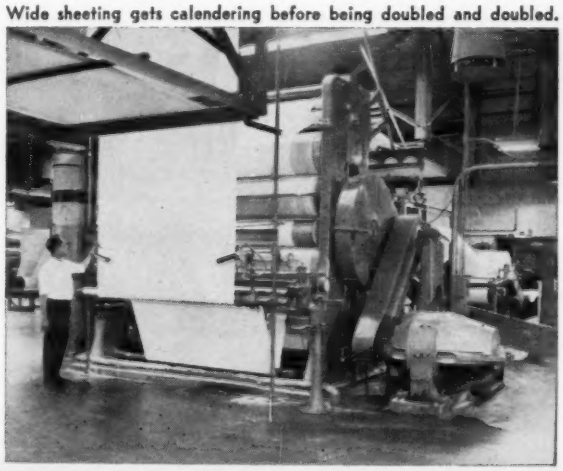
One word which may best describe this finishing plant is "versatile." There is no question but that Dan River demands of its finishing mill countless tasks which would be impossible to accomplish without tremendous versatility.

For example, through the finishing departments pass cotton, imported linen, and synthetics of all types, each requiring many different routings, well over a hundred different finishes, different handling, and special processing.

The several fibers mentioned are made into a host of varied fabrics including such usual items as dress goods, shirtings, fancy and plain bed linens, sportswear, men's trousers, rainwear, ties, and work clothes and including such

Mercerizer handles wash-and-wear sheetings up to 110" in width.

Wide sheeting gets calendering before being doubled and doubled.



New binder for starch warp size improves efficiency and finish

...for synthetic, natural and synthetic/natural fiber blends

POLYMER REPORT

POLYFILM B-2 improves adhesion, makes yarn stronger, more flexible.

POLYFILM B-2 is a water-dilutable solution of acrylic resin specially formulated to improve film strength, surface and adhesion of starch to synthetic and natural fibers.

Easy to use

POLYFILM B-2 improves conventional starches, modified starches and starch gums. It is added in amounts from 5 to 30% (of weight of dry starch) at any point in the cooking cycle. Disperses quickly, completely . . . without lumps. Gives *uniform* size, day in and day out.

Effective on wide range of synthetic fibers and blends

Used for 100% acetate; acetate-viscose; 100% acrylic; acrylic with viscose, wool, polyester or cotton; 100% polyester; polyester with cotton, viscose or wool; triacetate-viscose, etc.

For hard-to-size fibers producing hairy yarns, POLYFILM B-2 reduces clinging and shedding. Excellent for seersuckers, gabardines, twills, etc. requiring maximum flexibility.

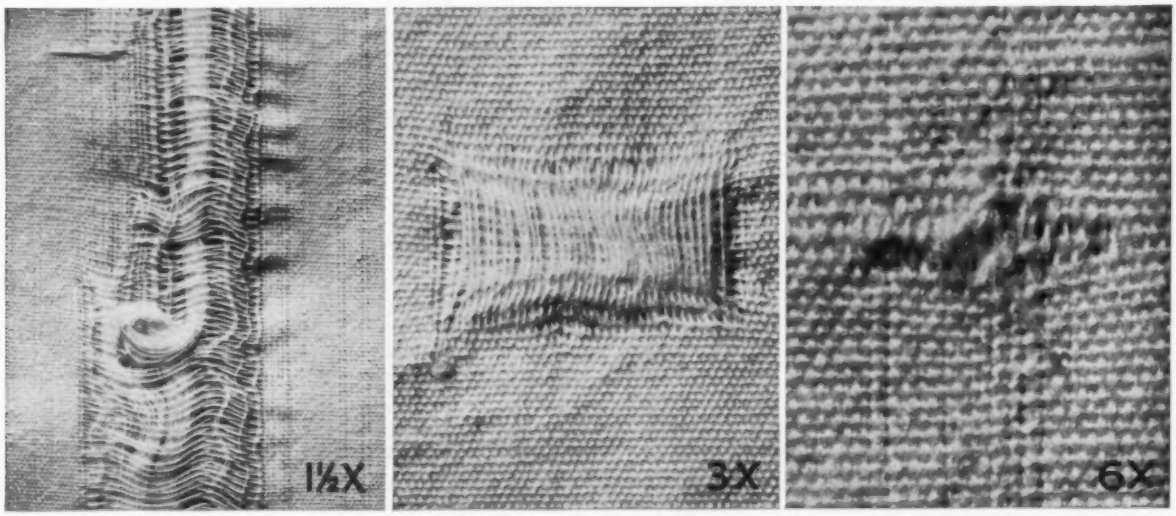
For mills running straight cotton as well as blends, POLYFILM B-2 has been run with starch on carded and combed yarns in counts from 7/1 to 60/1 for fabrics from Osnaburgs to lawns. Marked improvement in efficiency (2-3%) has been demonstrated.

Easily removed

POLYFILM B-2 is quickly removed by conventional boil-off desizing including enzmye baths . . . *even when fabric is heat-set for 2 minutes at 400°F.* Size can be cleaned from equipment with hot *or* cold water.

Technical Service

Polymer Industries' mill-trained textile chemists are available to help you with warp sizing and finishing problems. Call or write Polymer Southern Division, Dept. T6 Box 2184, Greenville, S. C. or Polymer Industries, Inc. Dept. T6, Springdale, Conn.

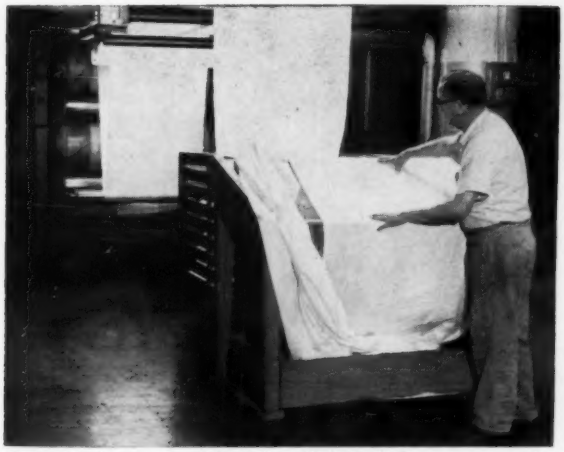


Three types of weaving defects caused by "clinging" of warp ends. By adding POLYFILM B-2 to starch type warp sizes, a smoother warp is produced thereby reducing "clinging," "fluff balls," "floats" and many other misweaves.

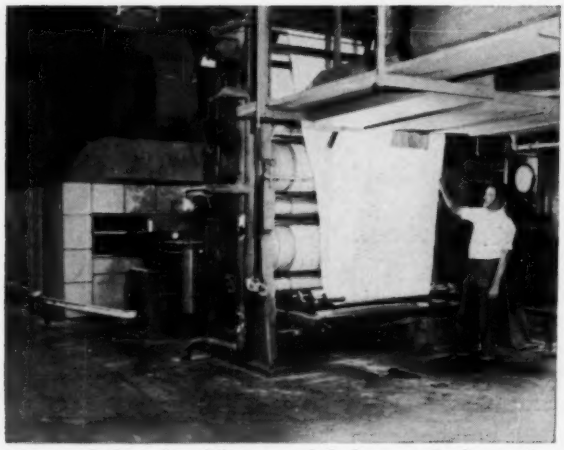
Polymer Industries

Polymers, copolymers, natural and synthetic products for sizing, printing, stiffening, softening, coating and laminating. Plants at Springdale, Conn. and Greenville, S. C.

For further information use Handy Return Card, Page 187



Operative inspecting cloth being discharged from range, tenter.



Inspector looking for defects as cloth leaves calender section.

unusual items as fabrics for hats, awnings, filter cloths, mechanics' fender covers, high temperature ironing board covers, duffle bags, tents, napped hunting shirts, and decorative vinyl sprays.

The machinery itself, as previously indicated, is admirably suited to do the job it is required to perform. The continuous peroxide bleach ranges are electronically controlled for bleaching processes. The mercerizers are equipped to handle cloth from minimum widths up to 110″.

The finishing ranges are made up of water mangles, dry cans, double finishing pads, 90′ tenter ovens, calenders, and curing ovens, while elsewhere in the finishing spaces can be found individual chase, schreiner, friction, silk, and regular calenders. Of note is the fact that all finishing, curing, and open washing facilities handle goods up to 110″ in width.

Thus, no matter what fiber is to be processed or what fabric is to be finished, Dan River finds itself in an eminently satisfactory condition, because of the nature and variety of its machinery, its finishes, and its technicians, to do the job that needs to be done—the finishing of about 4,000,000 yards of cloth each working week throughout the year.

Versatility, however, though of tremendous benefit to any company that is in the business of finishing cloth, tells only part of the story.

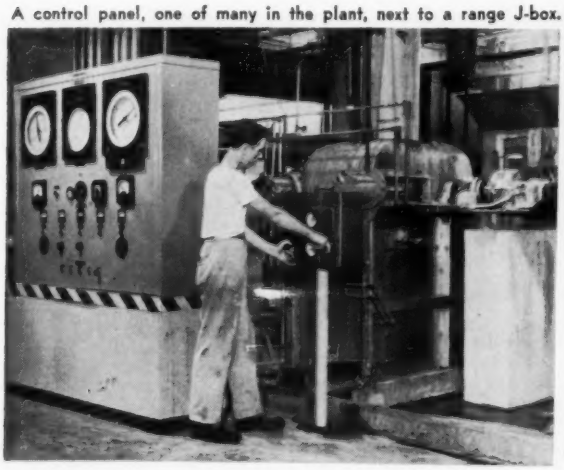
Finishing spaces alone account for almost one million square feet of the 5,713,880 square feet that make up the total area of what has been described as the world's largest single-unit textile concern.

Several hundred machines housed in the aforesaid finishing spaces and devoted exclusively to the finishing of Dan River and commission fabrics cover the widest range of machinery and auxiliary equipment, including a half million dollar electronic installation.

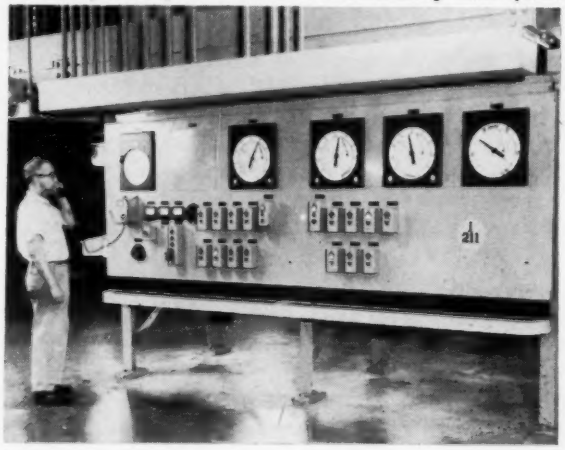
Operating individually or in tandem are continuous peroxide bleach ranges (with singers, J boxes and saturators), dye becks, stacks of dry cans (some of which contain as many as 70 cans operating at speeds up to 250 rpm), kiers, dye ranges, pads, jigs, soapers, finishing ranges, calenders, curers, mangles, compressive shrinking machines, loop dryers, shearers, yarders, tubers, and batchers, most of which can be counted by the dozen.

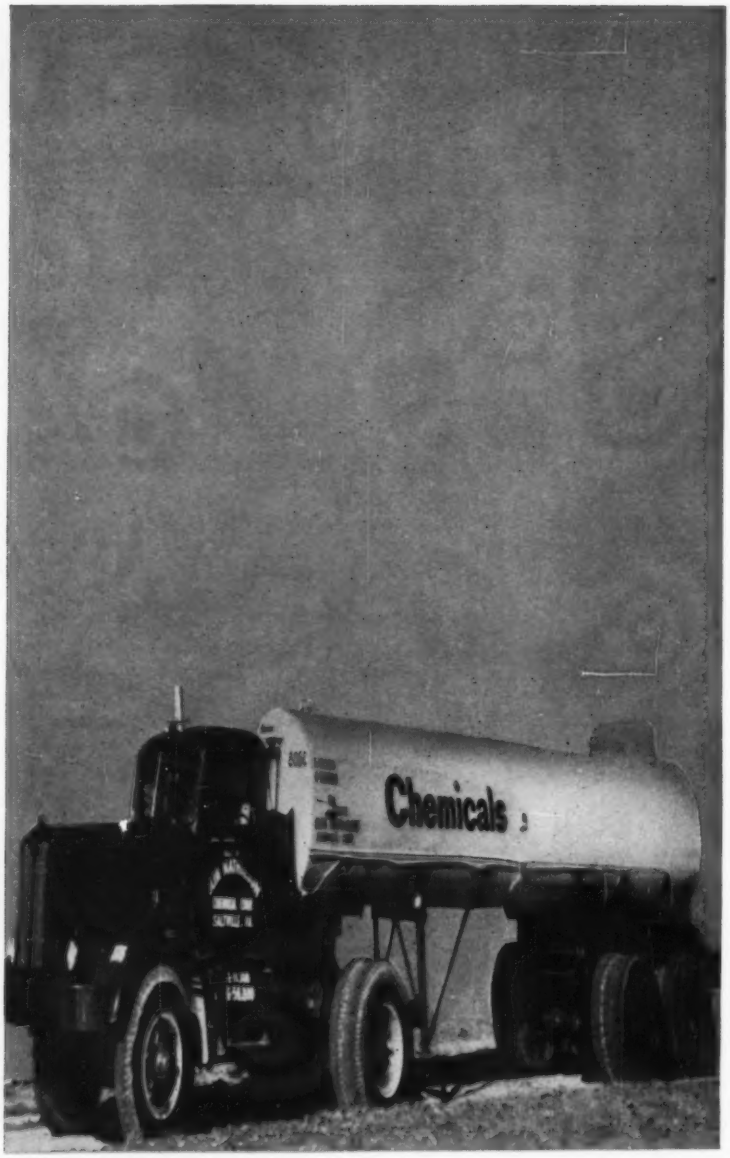
Dan River's facilities are notably modern for millions of dollars have been expended since the end of World War II on a planned program to make Dan River's finishing machinery second to none in the country.

A control panel, one of many in the plant, next to a range J-box.



A small part of plant's control network—finishing tenter panel.





Mathieson SQUEEZES your caustic delivery costs

How? Many ways. For example, in most areas, you can order 73% Mathieson caustic soda by truck. The benefits to you are obvious. This concentrated solution means fewer deliveries, less shipping weight, less transportation cost. And only Olin Mathieson offers you this convenient truck delivery.

More ways Mathieson squeezes delivery costs? Location. Mathieson has eight producing plants and shipping points (with a ninth under construction) covering the industrial South and East, with barge, rail or truck shipments to suit your needs.

Convenient truck scheduling: we time deliveries when you need them. Service: as you have a right to expect, it's part of company policy, backing every Mathieson chemical with technical assistance. For full details, write OLIN MATHIESON, Baltimore 3, Maryland.

Ammonia • Carbon Dioxide • Caustic Soda • Chlorine • Hydrazine and Derivatives • Hypochlorite Products • Methanol • Muriatic Acid • Nitric Acid • Soda Ash • Sodium Bicarbonate • Sodium Chlorate • Sodium Chlorite Products • Sodium Methylate • Sodium Nitrate • Sulfur (Processed) • Sulfuric Acid • Urea 8947

CHEMICALS DIVISION Olin

For further information use Handy Return Card, Page 187

Solvent Dewaxing of Cotton

Method and economics of removing cotton wax continuously with trichloroethylene

by Stanley M. Suchecki
Associate Editor

Exclusive

IN THIS country, solvent extraction of fatty matter from textile fibers and fabrics has been of commercial importance only in the woolen industry. For almost half a century, various solvent extraction processes have been publicized in which the wool grease can be removed by batch or continuous methods, with economical recovery of solvent and grease. Despite the feasibility of solvent scouring and the fact that it offers a means of reducing the pollution of our streams, it has found little acceptance on an industry-wide basis.

In the cotton industry, solvent extraction as a preparatory operation has not been considered a real necessity, at least not in this country. For one thing, highly productive preparatory and bleaching processes have been developed over the years, which afford a cotton fabric of high purity at a low cost. Furthermore, the prepared fabric contains a substantially reduced percentage of natural wax—the chief impurity to be removed in solvent extraction.

Without doubt, pressure boiling in caustic soda is more effective in removing the natural wax than the much shorter continuous processes. As is to be expected, the percentage of wax remaining in the fabric after kier boiling is lower; but the higher content in the continuously prepared fabric is not detrimental in further processing, since the fabric is of satisfactory absorbency and purity.

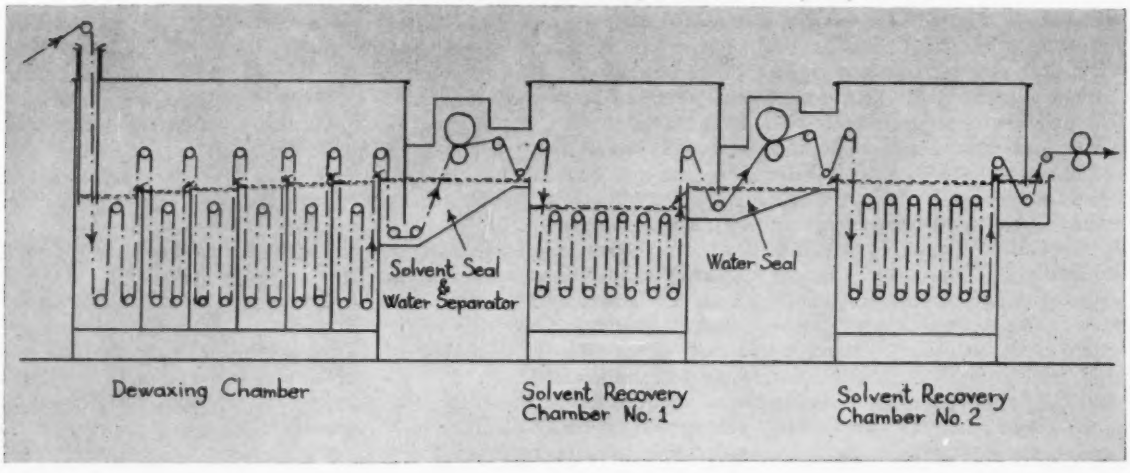
THE PROBLEMS which natural wax presents in processing are well known. Although its original amount generally does not exceed 1%, it contributes to water repellency, and causes yellowing upon heating. If it is not uniformly removed to a large degree, it will create problems in dyeing, where high absorbency is essential in today's high speeds of operation.

While removal of wax by saponification with alkali is satisfactory, it must be recognized that solvent extraction is a more ideal method. Yet little effort has been made in this country to explore solvent extraction and the benefits of a thorough and perhaps a more uniform removal of wax. But in Britain, some years ago, a research team at Imperial Chemical Industries began such an investigation on the premise that a greater possibility of success existed than in the past since solvents were being applied successfully and economically in other industries. Furthermore, early experiments with trichlorethylene indicated that this relatively cheap, nonflammable solvent, with its absence of chronic toxicity, was very effective in removing natural wax (equal to chloroform). A cotton wax content of 1.9%, for example, could be reduced to 0.23% after only a 15-second immersion in boiling trichlorethylene.

As work in the I.C.I. laboratories progressed, pointing to the feasibility of solvent extraction, a pilot plant was designed and subsequently installed for continuous processing of fabrics. Numerous trials were made not only on cotton fabrics but also on woolens and worsteds, and on blended fabrics, rayon, linen, glass, and jute.

Results of pilot plant trials on cotton fabrics showed that solvent dewaxing when followed by

Commercial unit for solvent dewaxing of cotton fabrics up to 60" wide at 50 yards per minute.



Bleaching Process Based on Solvent Dewaxing

	Grey	Dewaxed	Dewaxed and Desized	Dewaxed Desized and Peroxide	Commercial Batch Process*	Commercial Continuous Process**
Chloroform extract, %	1.15	0.15	0.20	0.21	0.35	0.43
Ethyl alcohol extract, %	0.67	0.40	0.30	0.26	0.22	0.20
Water-soluble matter, %	5.25	1.12	0.62	0.87	0.39	0.64
Alkali-soluble matter, %	12.30	7.14	3.64	3.73	0.67	2.43
Starch content, %	4.98	2.17	0.52	0.38	0.09	0.43
Nitrogen content, %	0.21	0.15	0.08	0.05	0.01	0.02
Ash, %	1.96	0.85	0.60	0.84	0.21	0.59
Copper number	1.25	0.24	0.12	0.16	0.01	0.11
Methylene Blue absorption number	2.37	2.36	1.92	1.90	0.95	1.42
Fluidity	—	1.9	2.4	4.4	2.5	3.5
Reflectance (Eel), %	65	68	77	86	91	87

*Commercial Batch Process: Conventional desizing, followed by caustic-soda kiering under pressure and peroxide bleaching in the kier.

**Commercial Continuous Process: Enzyme desizing, acid scouring, caustic steaming, and peroxide steaming in an American fully continuous open-width operation.

peroxide is used) could form the peroxide-desizing (in which sodium basis of a continuous method of scouring and partially bleaching the fabric to a satisfactory degree of purity and absorbency. In this method, the time of treatment lasts between 3 and 5 minutes. If a mote-free cloth of full whiteness is desired, this method must be followed by additional peroxide bleaching.

The results of chemical analyses of fabrics prepared by various methods are shown in the accompanying table.

AS EVIDENCE that extraction with trichlorethylene is economically sound and offers benefits besides, four large-scale solvent extraction plants have been put into operation in British textile mills. One of the dewaxing units is devoted exclusively to cotton, while another is utilized for cotton and jute, and the remaining units are utilized for scouring woolen and worsted piece goods. All of these solvent extraction plants are based on I.C.I.'s patented process and in all cases the solvent is trichlorethylene.

In one of the commercial applications, the dewaxing unit treats cotton cloth up to 60 inches in width at about 50 yards per minute. The accompanying drawing shows the path of the cloth through the dewaxing unit.

After passage through a boiling trichlorethylene bath, the cloth enters a solvent seal and water separator and then passes through two solvent recovery compartments (also known as flash-off chambers), where the temperature of the water is maintained above 73 C, the steam distillation temperature of trichlorethylene. It is quite feasible to use a continuous self-cleaning still (one that continuously discharges solvent-free residue) rather than to use two batch stills if large amounts of wax are to be recovered. In this finishing plant, the dewaxed cloth is passed through modified conventional batch - scouring and bleaching operations.

Studies of trichlorethylene consumption on large pilot plant runs indicate that a properly designed production plant would probably function with an over-all solvent loss of about 2% on the weight of the fabric treated. At a cost of about 11¼¢/lb for trichlorethylene, the chemical cost of treating 100 lb of material would reach about 22½¢.

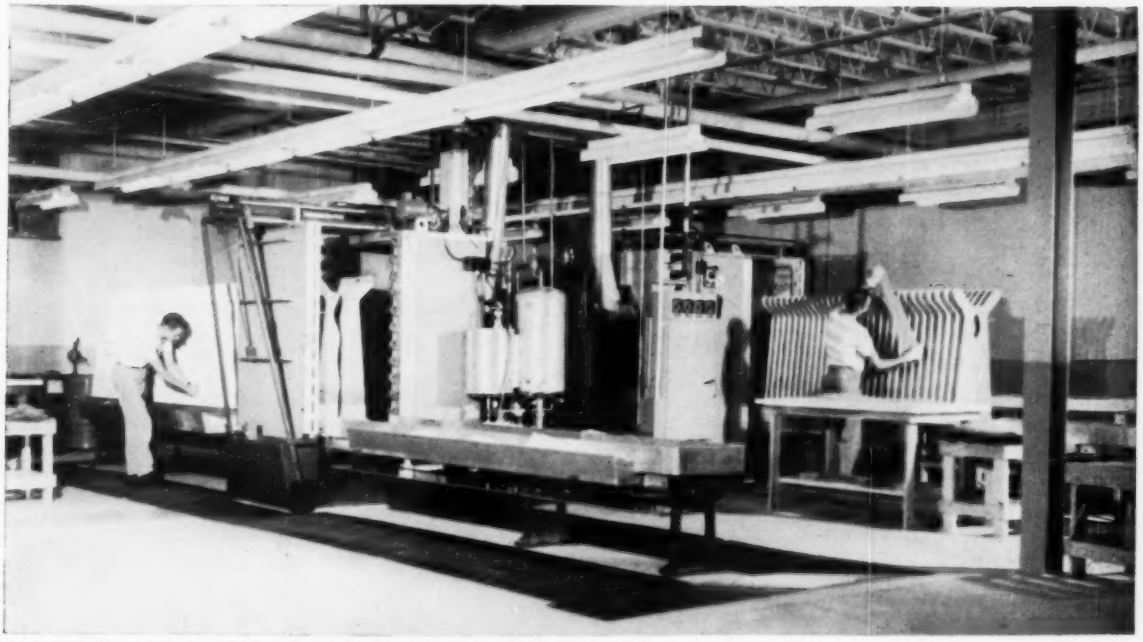
Though there are only four dewaxing installations operating in Britain (there may be others elsewhere), their merit has been established from the standpoints of economy and efficiency. In this country, dewaxing in cotton finishing will probably be given consideration as a preliminary treatment, provided that it offers economies through reduction of subsequent processing and a justifiable improvement in quality. It might well be a valuable aid in preparing heavier fabrics and others which require processing in open-width for one reason or another. Where mercerization is required in the grey in processing heavier fabrics, the absence of wax would certainly facilitate penetration.

FOR LARGE-SCALE adoption in this country by an industry that is extremely cost-conscious and accustomed to processing cotton fabrics at high speeds, dewaxing must meet a more difficult set of conditions. If it is to fit into a typical sequence of operations in American plants, it must follow singeing. The fabric cannot be wet out before dewaxing, however, but must be quenched with steam.

For such continuous processing it must be borne in mind that speeds of 150 yards per minute in singeing are not uncommon. This would place a heavier burden on the dewaxing process. Nevertheless, if singeing and dewaxing could be combined and followed by enzyme desizing, the fabric would have acquired a high degree of absorbency and cleanliness by a relatively simple and trouble-free technology. If kiering is to

Continued on page 147

4-in-1 Hosiery Finishing



Two Turbo Dye Boarders eliminated need for separate dye house.

Close-up shows spray nozzles inside cabinet just before it closes for a cycle. Nozzles are similarly located on near side of cabinet.

Staff prepared—Exclusive

HARRIS-MARSHALL Hosiery Co., Galax, Va., chartered in 1945, produces men's and boys' socks in argyles and solid color patterns on SCP, VIP, and SCOP knitting machines. Starting with 25,000 square feet of floor space in a mill built expressly for hosiery manufacture, the company has recently expanded to include another 22,000 square feet, not counting storage space, for production of ladies' seamless nylon hosiery.

One hundred and forty seamless, 400-needle, single-feed Bentley KL machines have been installed in the new addition. The installation was completed in December, 1960, and the plant is now in full production, making about 2,750 dozens of finished goods in a five-day work week.

One of the outstanding highlights of the new seamless addition is the hosiery finishing equipment. Seamless stockings are dyed and finished on new Dye Boarders. Production is 160 dozens in eight hours, with two operators on each machine. The machines combine the four operations of preboarding, dyeing, post boarding, and drying in one cycle of about 8½ minutes, according to J. H. Kegley, secretary and assistant manager of the plant. With fewer dressing and stripping operations, the number of pulls and snags is reduced.

Efficiency is estimated to be 10-12% better than

Don't blindfold him!

THE MAN in this picture is a cancer research scientist. The device he is using looks like something out of science fiction—but actually, it's an electron microscope. It shows the sub-microscopic detail of a cancer cell—magnified 100,000 times. *The cost of one electron microscope is $35,000.*

Some of the equipment needed for cancer research is even more expensive.

Today, in research centers throughout the country, 1300 scientists, supported by American Cancer Society funds, are at work searching for the cause of cancer—and, ultimately, ways to prevent it.

The American Cancer Society grants millions of dollars for research on such projects as the study of viruses as a possible cause of cancer—the development of hormone treatments for cancer—the control of cancer by drugs. *Life-and-death projects.*

Your help is needed to enable the American Cancer Society to continue this support.

Don't blindfold cancer research. Give to it. Send your contribution now, to CANCER, c/o your local post office. All gifts are tax-deductible.

AMERICAN CANCER SOCIETY

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New seamless machines in 22,000-sq-ft addition. Production of each machine is checked for quality on a form at the end of the line.

Modern high-speed seamers like this are used in Harris-Marshall's new seamless hosiery department for making the toe closures.

New Inspectomatic machines help to keep quality at a high level.

Hosiery is inspected, paired on plainly marked dull white tables.

other methods considered for the job. This system is much simpler, since it combines operations and requires fewer operatives and less handling of the goods. Quality is at a high level in view of few picks and pulls from the usual frequent handling.

Each of the two new Dye Boarders has 120 hosiery forms and handles 60 stockings per cycle. Each operator strips and dresses 30 forms while the other 60 forms are in the cabinet being processed. The cycle begins with pre-steaming, then the steam-heated dye solution is pressure-sprayed onto the hosiery. The dyeing time and temperature, once established, will repeat from lot to lot. The final setting takes place at a predetermined higher temperature to control the degree of plasticizing.

A timer controls the rinsing period and opens the drain valves. This is followed by a period of heated air drying before the cabinet opens to deliver the finished stockings.

The dye concentrate, which is mixed with water as it is metered into the chamber, contains detergent, resin finish, and lubricant to comply with specifications. Although the Dye Boarder is used to combine the four operations in hosiery finishing, it is used on occasion for each of the individual functions.

From knitting machines, goods go to seamers, to Inspectomatic, to dye boarders, to pairers and inspectors, to folding and packaging.

More elasticity is obtained in the finished stockings because of the Dye Boarder operation, and dye fastness, according to Henry L. Harris, president of the mill. It takes from three to four hours in the usual system of dyeing and finishing seamless hose, compared to 8½ minutes at 250 F constant temperature through all cycles on the Dye Boarders.

Harris-Marshall is said to be the first mill in the South to have this new machine.

A JACQUES WOLF Chemical for every processing need!

For any stage of textile processing, Jacques Wolf & Co. has a complete line of chemicals and specialties. Whatever your particular problem, we shall welcome the opportunity of submitting samples custom-formulated to meet your needs. Write for our catalog.

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HYDROSULFITES

HYDROSULFITE AWC—($NaHSO_2CH_2O.2H_2O$)
For stripping and discharge printing.
HYDROSULFITE OF SODA—(Conc.) ($Na_2S_2O_4$)
For reduction of vat colors. Non-Dusting
HYDROSULPHITE B Z—($Zn(OH)HSO_2CH_2O$)
For stripping wool stock, shoddy, rags.
HYDROZIN®—($Zn(HSO_2CH_2O)_2$)
For stripping acetate dyes and discharge printing on acetate dyed grounds.
HYDROSULFITE QD—For rapid dissolving in continuous vat dyeing.

DE-SIZING

AMPROZYME®—For liquefaction of starches and proteins in de-sizing textiles.
DIASTAZYME®—Used as an economical de-sizing agent for starch-sized textiles.

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ORATOL® L-48—A synthetic detergent with excellent penetrating and emulsifying properties.
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PARNOL—Sodium Dodecyl Benzene Sulphonate.
SELLOGEN® GEL — A synthetic detergent used also in dyeing and as a wetting agent for all natural and synthetic fibre.
DETERGENT W-1750A—Has anionic and non-ionic properties; excellent for scouring nylon and dacron to remove throwster sizings; penetrates and lifts graphite streaks

DYEING

WETSIT™ CONC—A synthetic aromatic compound for wetting out in both the dyeing and scouring operations.
WETSIT NI—100% non-ionic wetting agent.
MONOPOLE® OIL—A highly concentrated, double sulphonated castor oil for a wide range of operations.
APASOL®—Particularly effective in the dispersion of acetate printing colors. A sulphonated ester with a high combined SO_3.
LOMAR® PW—Dispersing agent for pad dyed vat colors; also retardant in the dyebath.
SULPHONATED OILS—Castor, Cod, Sperm, Olive, Neatsfoot, Pine, Red, Teaseed, etc.

FINISHING

DILEINE® SERIES—An amino concentrate for the prevention of atmospheric gas fading on dyed acetate fibers.
MELEINE® SERIES—Complex organic nitrogenous compounds used on finishes to protect acetate dyed fabrics from atmospheric gas fading.
STATLESS—Paste for reducing static on all fibres.
CREAM SOFTENERS—In different strengths and varied degrees of alkalinity for a soft full hand to all types of fabrics.
LUPOMIN®—A series of cationic nitrogen compounds used for softening and finishing textiles.
CHAFE REMOVER W-545-T—A finishing oil for textiles, particularly silk fabrics, to remove chafe marks.
LUXAPOLE™ W-1054-B—A superior, sulphonated oil for finishing all fine fabrics.
OIL S-261C—A clear, amber oil used as a penetrator and softener for cotton cloth; aids in uniform shrinkage.
SOLUBLE WAX JB—A dispersed vegetable wax for full body and high lustre to cotton goods.
WEIGHTER FINISH M—For heavier body and better hand for all fabrics.

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Weighting Finishes	

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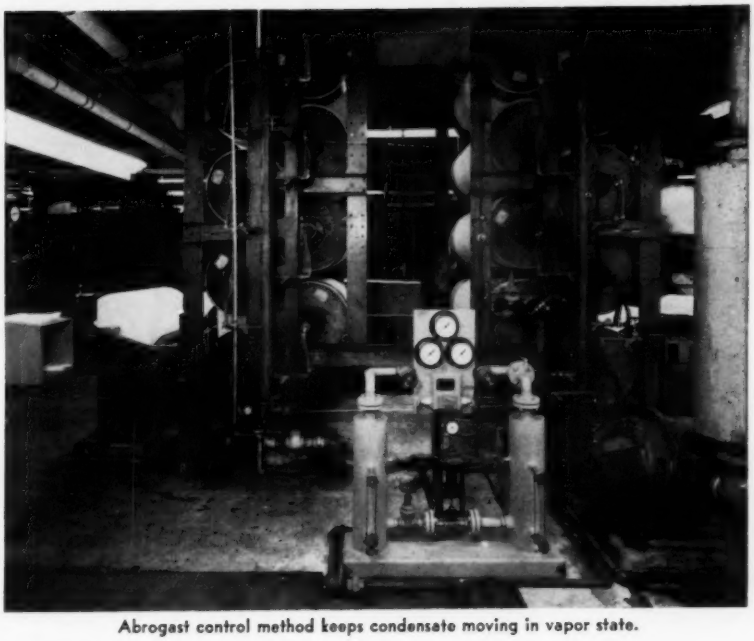

Abrogast control method keeps condensate moving in vapor state.

They Licked a Condensate Problem

Jefferson Bleachery is now sure of drier steam and constant temperatures—and condensate control increased drying capacity by 25%

JEFFERSON Bleachery, at Jefferson, S. C., used to have bucket-type steam traps on a loop dryer. Certain types of fabrics, with four strands passing through the dryer, were dried at 340 F—but the temperature was never uniform because the steam wasn't dry. The sixteen traps permitted too much hot water condensate in the heaters.

After installation of a condensate control, the problem was licked. Combined with a new boiler, the control assures drier steam and constant temperatures.

With the new control, there is less plumbing, and one control replaces all sixteen traps. Maintenance on the plumbing is entirely eliminated, and there are no "steam hammers" on starting up after weekends. On one occasion before the change, a heater was ruined by a steam hammer, and the cost of replacement was $700.

Oil consumption dropped 300 gallons per week after the unit was installed; it should be amortized in about six months on the basis of actual savings, apart from quality and other improvements, including less maintenance.

At Jefferson, the dryer is also used for curing resin finishes.

Another Plant's Experience. The condensate controls increased drying capacity by 25 per cent in another large South Carolina finishing plant.

As this was written, five condensate control units had been in service from one to six months in this plant. Four were on a 30-day trial. Three are on dry cans taking fabric from a water mangle and/or dye pad.

These units keep condensate moving in the vapor state instead of changing it to water and then draining it. The control allows operation of dry cans at more uniform temperature, and every can operates at maximum efficiency, according to plant officials.

There are sixty 23 x 50-inch cans in the stack showing the most improvement. One unit works at 25 pounds of steam pressure in the cans on the same weight of cloth formerly requiring 35 pounds of steam, using another condensate control method. The chief engineer in this large plant said there is a definite improvement over previous installations.

The cans are operated at about 320 F and 225 ypm on 4-yd cotton goods. Formerly, there was a trap on each can, and they were checked once each week. All traps had to be removed to check valves. The new condensate controls are observed every day. In case of failure, a by-pass valve is opened so it is not necessary to shut off the machine. The investment will be amortized easily within six months on the dry cans, according to the chief engineer.

every fiber, every fabric, benefits from the new finishes made with A-C Polyethylene

The new textile emulsions now being formulated with Allied Chemical's A-C® Polyethylene benefit *every* fiber —natural or synthetic—in one way or another over other finishes.

Take wash-and-wears, for example. Here, A-C Polyethylene overcomes loss of hand and tear strength when used as a softener along with conventional resins.

Emulsifiable A-C Polyethylene is permanent through multiple cleaning cycles. It increases abrasion resistance and tear strength . . . imparts extra crease resistance and better sewability.

Your textile chemical supplier either has an A-C Polyethylene finish on hand or can formulate one for your specific use—suitings, dresses, hosiery, curtains, rugs, upholstery. (We make A-C Polyethylene, not finishing emulsions.) Or write for complete information to: Plastics Division, Dept. 612-TI, 40 Rector St., N.Y. 6, N.Y. In Canada: Allied Chemical Canada, Ltd., Montreal.

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COLORING, BLEACHING, AND FINISHING DEVELOPMENTS

New Wash Wear-Cotton Finish. Joseph Bancroft & Sons Co. announces the development of a new nonresinous finish for cotton fabrics which is based on fiber modification. The treatment is said to withstand repeated home or commercial laundering with wash-wear performance guaranteed for the life of the garment. Drying time is reduced by as much as 30% and there is no progressive shrinkage or yellowing in use.

Deodorizing Process. Designed to remove objectionable odor from resin-finished goods, a new process utilizes a gas induced by a chemical reaction. The only equipment necessary is an ager or steamer and cost per yard is reported to be negligible if an ager is installed to make the process continuous after curing of the resin.

Continuous Bleaching. A new continuous bleaching process which utilizes sodium chlorite is claimed to reduce bleaching costs by as much as 40%. Chemical cost is a few cents below that of peroxide and only 60-80% as much of the product is used. No special equipment is required.

New Pad Dyeing Technique. Several Canadian companies are reported to be utilizing Hisperse extra-fine particle size dyestuffs, made by the Interchemical Corporation, for padding woven fabrics of acetate or nylon in the grey state. Simultaneous scouring and completion of the dyeing cycle is carried out on the jig. Among advantages claimed for this new technique are elimination of shading, both end-to-end and side-to-center, improved hand, and appreciable saving of time and labor.

Producing Silk-Like Cottons. A British patent describes a technique whereby all-cotton fabrics present the appearance of silk. The fabrics are constructed with a warp sateen weave with a plain cotton yarn and a novelty twist yarn with irregularly distributed thicker and thinner places employed together in the warp. An enhanced luster is obtained by subsequent mercerizing and finishing.

Laundry Finishing Agent. Now available for use by commercial laundries is a single finishing agent which combines laundry sour, fabric softener, and bacterio-stat for the washing of diapers.

Washable Wool Sweaters. Exclusive rights to the "Dylanize" process for making wool sweaters machine washable have been granted by Stevensons, U.S.A., to Puritan Sportswear Corp. for the 1961 fall season. Process, already successfully applied to blankets, is claimed to make sweaters shrink-proof for indefinite period, except for about 5% initial relaxation shrinkage.

Laminates Zoom. Recent estimate is that 1961 yardage of laminated knit goods will exceed 90 million, compared with 15 million yards in 1960 and just about nil in 1959. If the current trend continues, production is expected to climb to an annual rate of 300 million yards by 1965.

AATCC Tests. Effects of atmospheric contaminants on color fastness of fabrics will be tested in Florida, Arizona, Los Angeles, and in an industrial area of Chicago or New Jersey by American Association of Textile Chemists and Colorists. Tests will be made on a wide range of dyes and fibers. Purpose of tests is to find if discrepancies in results of sunlight fading tests are due to atmospheric factors.

Vinyl-to-Foam Process. U. S. Patent for a process to transform a vinyl backing to a foam laminate on the fabric has been patented by U.S. Rubber Co. The process is based on a "chemical blowing agent," called "Celogen AZ," incorporated in the vinyl backing; after the sheet has been laminated to the fabric, heat changes the agent to the gaseous form, causing the vinyl film to expand to a foam.

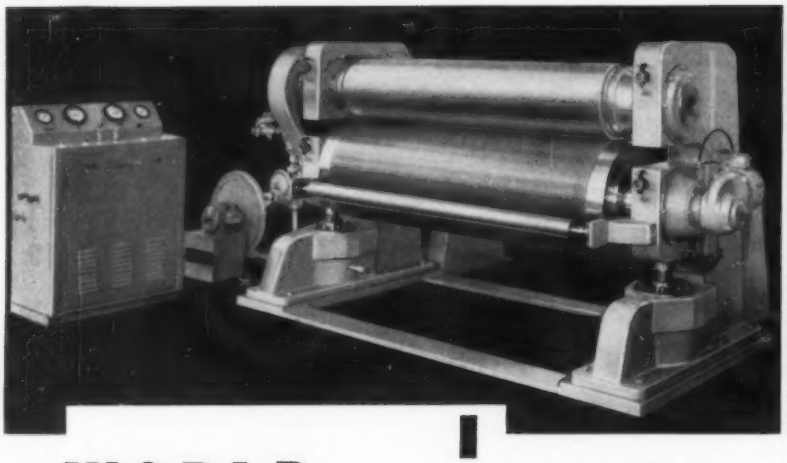
New Dyes and Chemicals

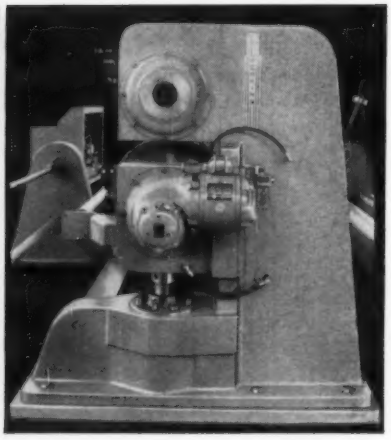
◆ *For more data on any of these dyes and chemicals, write supplier or use postage-free card on page 187, listing in space provided the code (F-1, F-2, etc.) in parentheses at end of descriptions.*

Rubber Latices. Two new butadiene - styrene, carboxylic - modified synthetic rubber latices for backing, binder, and adhesive applications have been announced by the Chemical Division of Goodyear Tire & Rubber Co. Both are of low viscosity and contain an antioxidant for better aging properties. Because of the carboxylic content, zinc oxide as well as conventional cures can be used. "Pliolite 460" imparts a stiffer hand than "Pliolite 440." (*F-1*)

Leveling Agent. "Dispersol CWL," a new level-dyeing assistant, allows greater flexibility and freedom in the use of acid milling dyes, according to Arnold, Hoffman & Co., Inc. In addition to level-dyeing, a cut in over-all dyeing time is claimed because higher starting temperatures and strongly acidic conditions can be used. (*F-2*)

Nylon Dye. Althouse Chemical Co. has added Scarlet 2GL paf to its Nylanthrene series of neutral dyeing colors for nylon, claiming brighter shades than previous scarlets offer-

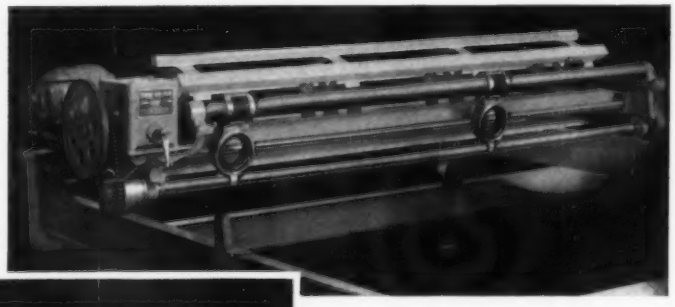




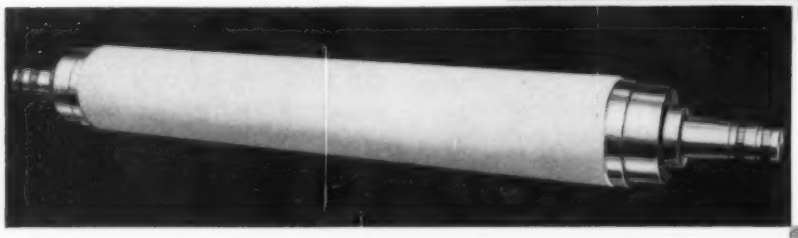
WORLD-WIDE ACCEPTANCE

Perkins Calenders, individually designed and custom-made, have long been known for their high factor of safety, simplicity of design and long record of service.

The 2-Roll 60-Ton Hydraulic Schreiner Calender is equipped with self aligning bearings and the Perkins patented bottom roll drive to keep both rolls rotating when skipping seams. The hydraulic unit enables individual pressure control of each side of the calender.

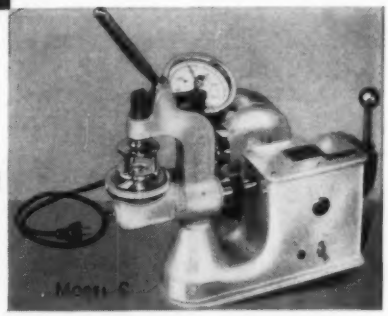


Perkins Bin Pilers are supplied with one, two, three or four traveling pot-eyes, and in widths up to 120". A real labor-saving unit — over 1,000 installed and operating.



PERKINS MULLEN TESTER

Mullen Testers are absolutely accurate, uniform and positive for ascertaining exact bursting strength of textiles.



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TEXTILE FINISHING MACHINERY

HOLYOKE • MASSACHUSETTS

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ed, and superior fastness to light. (*F-3*)

Fugitive Tints. A line of tints for natural and man-made fibers, said to offer fugitivity not previously available, has been developed by Deering Milliken Research Corp. The "Versatints," available in a complete range of colors, will be marketed by subsidiary Syn-Chem Corp. (*F-4*)

Wool Leveling Agent. A new leveling and retarding agent for dyeing wool yarns and fabrics, also recommended for stripping, has been announced by Arkansas Co., Inc. "Dyasist #486" is said to be particularly applicable where acid dyes requiring sulfuric acid are used, but may also be used with most milling colors. (*F-5*)

Adhesive for Foam. An adhesive for bonding polyurethane foam to fabrics, also recommended for application of rug backings, has been announced by Rubba, Inc. "Rubbafab" is applied on conventional machinery, requires no special heat sealing equipment, and is said to allow control of amount of air that can pass through the foam-fabric layer, from zero to a comfortable flow. (*F-6*)

Softener. A cationic softener in concentrated liquid form is new from the Du Pont Co. "Avitex Y" is intended for all fibers, and with the hydrophobic fibers gives moderate antistatic protection in addition to softening. It is compatible with starches, gums, and resins, and has only slight effect on selected vat and fast-to-light direct dyes. (*F-7*)

Foam for Interlinings. A special formulation polyester urethane foam for garment interlinings, available from Nopco Chemical Co., is said to afford closer knit appearance, better drape, and softer hand than previous foams. "Nopcofoam Insulining" is available in lengths to 450 yd and widths from 36 to 77 in. (*F-8*)

Latex for Rubberizing. A vinyl pyridine-styrene-butadiene latex now available from Goodyear Tire & Rubber Co.'s Chemical Division is intended to provide improved adhesion between nylon or rayon and rubber or rubberized fabric materials. Other qualities claimed for "Pliolite VP-100" are reduction of cord fatigue, improved processing characteristics, and excellent mechanical, chemical, and storage ability. (*F-9*)

Use a multipurpose grease?

Are multipurpose greases best for your plant? Here is the information to help you decide

by Banks Van Ormer
Sun Oil Co.

and George Burns
Sun Oil Co., Ltd.

Exclusive

WHILE the term multipurpose can, in the strict meaning, be applied to almost any grease, it generally means a high temperature, water-resistant grease suited to a large variety of lubricating grease applications. Ideally, such a grease meets *all* of the requirements of a particular user.

It is apparent that such a lubricant offers many advantages, including:

1. Simplified inventories since only one type of grease must be stocked.

2. Volume buying, which might not be possible with a variety of different greases.

3. Simplified lubrication, since the same equipment and procedures serve all purposes.

4. Reduced maintenance through elimination of misapplication which often occurs when a variety of different greases are in use. Prior to the introduction of multipurpose greases, which were developed during World War II, two types of grease were in common usage. They were calcium- or lime-base (water-resistant, low-temperature) and sodium- or soda-base (heat-resistant, water-soluble).

The development of a commercial lithium-base grease produced a product that incorporated all of the desirable properties of both calcium- and sodium-base greases, thus today's multipurpose grease was born.

Today it is possible to produce the desired characteristics by using a variety of different types of thickeners or gelling agents, and therefore multipurpose grease cannot be placed in any one basic thickener category. However, most of them are made with a lithium base.

Characteristics. In general, greases currently being marketed as multipurpose have all of the following characteristics:

1. Good water resistance.

2. Heat resistance—adequately high softening, melting or dropping points to stay on the job at temperatures as high as 300-350 F.

3. Good mechanical stability—able to maintain their physical

SUMMARY

The usefulness of a multipurpose grease depends very definitely on a plant's special needs. Today's multipurpose greases are generally designed for the high-speed-low-load type of application, so quite possibly if plant requirements are not extremely diversified they fall within this category and a single grease may be sufficient.

If not, many of the advantages of a multipurpose grease may still be enjoyed by the adoption of one other grade, probably of the extreme-pressure type to serve better in the low-speed-heavy-load type of application.

properties within allowable limits under severe operating conditions.

4. Good chemical stability—able to resist chemical breakdown or reaction with bearing metals even under the most severe conditions.

5. Medium consistency—usually an NLGI No. 2 Grade. Sufficiently soft for application by grease guns or high-pressure systems yet hard enough for use in grease cups or hand-packed bearings.

6. Good dispensability—smooth, buttery, short-fiber nature offering a minimum resistance to shear.

7. Good low-temperature properties—able to operate without excessive stiffening at temperatures down to approximately 0 F.

8. Satisfactory bleeding rate—while this may seem like an unusual term, it is true that some oil separation is desirable in order that a grease provide optimum lubrication.

9. Rust protection.

It is a fact that, all other things being equal, a stiffer grade, NLGI No. 3, would be better for extremely low temperatures. Obviously then, the choice of the NLGI No. 2 Grade is another compromise between the extremes of operating temperature.

In addition, multipurpose greases are generally made with medium-viscosity oils, 400-800 sec (SUS at 100 F). This viscosity range is chosen to provide the necessary balance between the high- and low-temperature applications for which this type of product is intended. This, then, is indicative of the fact that the designing of one grease for all applications is a compromise on optimum lubrication.

Applications. Turning from the greases themselves to practical applications, there are two basic situations for which lubricating greases are needed. The first is the high-speed-low-load application, such as an antifriction bearing in an electric motor. Rotary motion, at steady loads and speeds, with no reversing, is typical of this type of lubricating requirement.

Minimum resistance to motion or to the speed of the journal is desired. Butteriness, relatively low oil viscosity, typically about 500 sec (SUS at 100 F), and a consistency which produces channeling, are important for these applications.

At the other extreme is the low-speed-heavy-load situation such as the main bearings in a giant coal crusher where shock loading is also a factor. Other applications of this type frequently involve reciprocating motion, heavy shock loads, intermittent loading, or reversing.

Plain bearings or roller bearings are usually used for this type of application. Adhesiveness, higher oil viscosity, 1000 sec min (SUS at 100 F), and a softer consistency to prevent channeling and thereby assure a proper degree of feedback, are necessary in this type of application.

The perfect multipurpose grease, then, would be a product made from both a high- and low-viscosity oil, having both channeling and nonchanneling properties, and

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Milwaukee, Wisconsin

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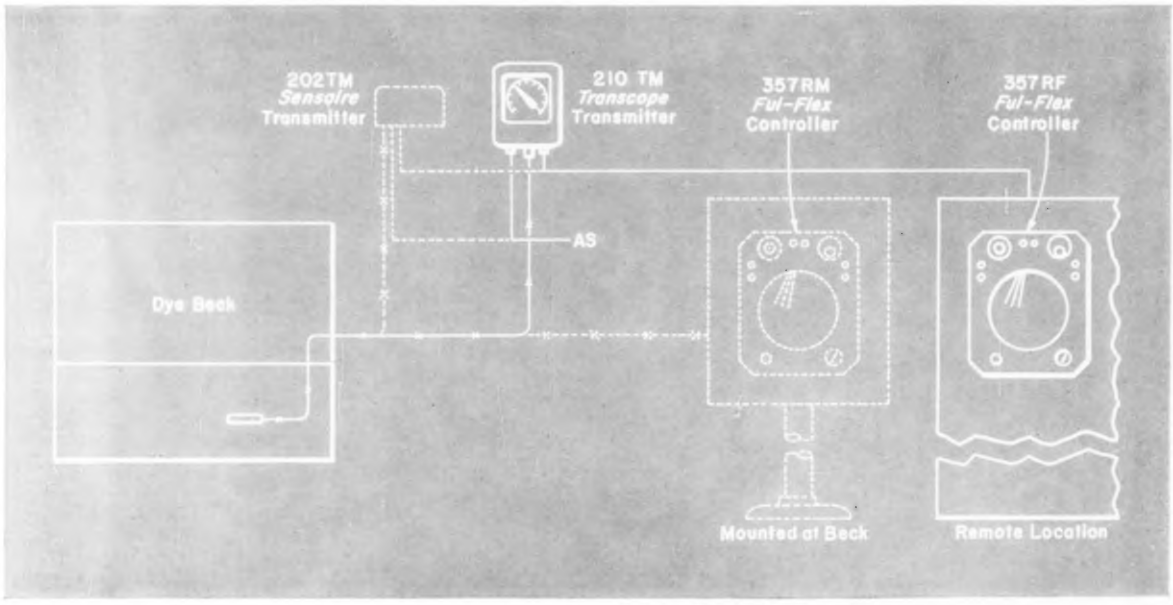
IN CANADA: CHEMICAL DEVELOPMENTS OF CANADA, LTD., MONTREAL

3 WAYS TO CONTROL A DYE BECK



1. **FUL-FLEX* Controller** at remote location, receiving signal from 202TM SENSAIRE* Non-indicating Temperature Transmitter.
2. **FUL-FLEX Controller** at remote location, receiving signal from 210TM TRANSCOPE* Indicating Temperature Transmitter.
3. **FUL-FLEX Controller** mounted at Dye Beck.

With the versatile Taylor FUL-FLEX Dye Cycle Controller you have the choice of centralized control — right in the boss dyer's office if you wish — or control at the dye beck. And whichever system you decide on, the FUL-FLEX controller will give you as much or as little automatic control as you require.

In addition to the features listed here, a FUL-FLEX controller gives automatic rate-of-rise protection. The rate of rise as originally set can never be exceeded, regardless of steam pressure fluctuations.

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Increased production through quicker matching of shades, fewer add periods.

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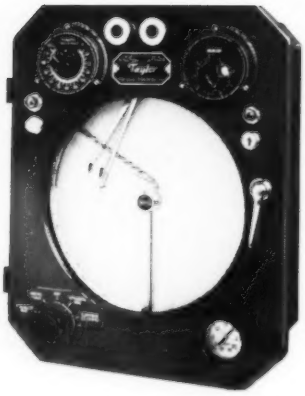

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- Adjustable end temperature
- Adjustable automatic rinse

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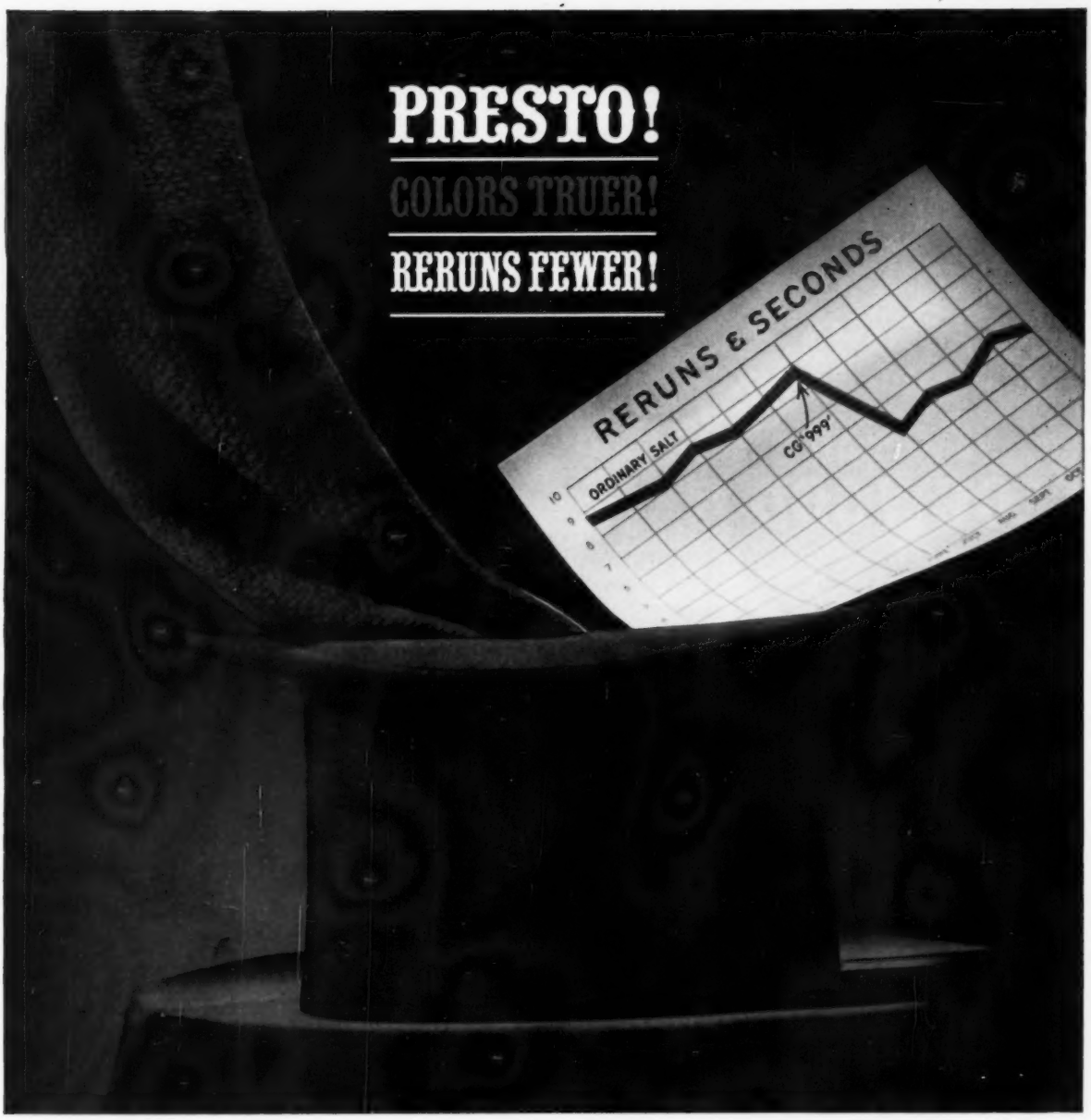

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	Grease No. 1 for high-speed-low-load applications	Grease No. 2 for low-speed-heavy-load applications
Texture	Smooth	Smooth
Nature	Buttery, channeling	Adhesive, non-channeling
NLGI Grade	No. 2 or No. 3	No. 0 or No. 1
Oil viscosity, SUS at 100 F	400-800	1000 min
Dropping Point, ASTM, F	375 min	200 min
Water resistant	Yes	Yes
Rust and oxidation protection	Yes	Yes
Extreme pressure properties	No	Desirable

Figure 1. Typical properties of two greases that would, in many plants, provide optimum lubrication as well as minimize grease inventories. Both resist water and retard rust.

being both buttery and adhesive.

Obviously, no one grease can be all these things, and therefore the requirements of the two extremes of application have to be compromised in any effort to find the universal lubricating grease.

This is the key to deciding whether multipurpose greases will meet your particular requirements. Whether a grease is truly multipurpose depends as much, or perhaps more, on the conditions under which you will use it as it does on the properties of the lubricant itself.

For instance, a machine tool shop may find that a single grease will meet all of its lubricating requirements, since they are likely to be confined to the high-speed-low-load type. As the requirements become more diversified, the possibility of finding a truly multipurpose grease becomes correspondingly more remote.

Users in coldweather areas are unlikely to find a single grease that will serve high-temperature lubricating needs and at the same time be suitable for exposed or semi-exposed winter operations.

When multipurpose greases first received widespread attention, many firms sought to restrict their entire grease inventory to a single grade. Typical of the experience of many users was that of a prominent, multiplant company with a wide variety of application requirements. After several years of trial, practical experience—particularly with low-speed-heavy-load applications—led the company to add a second grade, which was more adhesive and had better shock resistance.

Figure 1 shows typical properties of two greases which, in many plants, would provide more optimum lubrication as well as keep grease inventories at a minimum.

Two ways to dye Dacron tow in a raw stock basket

Extract*

■ TWO BASIC procedures are available for dyeing Dacron tow in a raw-stock basket.

The first is conventional dyeing which is suitable for making shades with up to 4.0 to 6.0% of disperse dyes, depending on the dyes used and the denier of the tow. In heavy shades, such as deep navies, browns, charcoals, and developed blacks, filtration of the dyes can occur because of extreme packing of the tow during the dyeing operation. This difficulty is particularly pronounced in the fine 1½- and 3-denier tow which pack to a greater degree than evident with six-denier tow.

With very heavy shades, particu-

*From article "Dyeing of 'Dacron' Polyester Tow," by J. J. Iannarone, Jr., in a recent issue of *Dyes and Chemicals Technical Bulletin*, a publication of E. I. du Pont de Nemours & Co., Inc.

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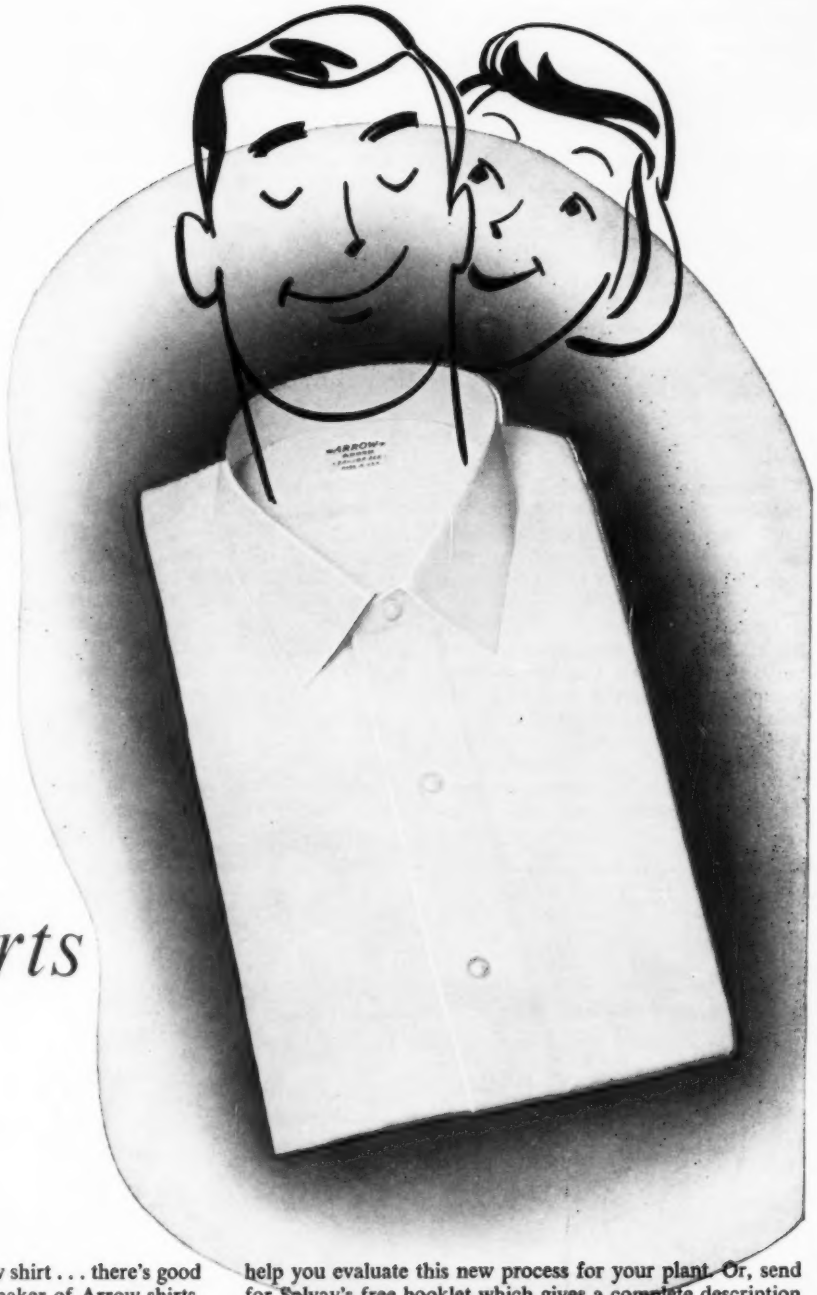
Solvay Activated Hydrogen Peroxide Bleaching Process gives

a whiter, brighter white to Arrow shirts



You always look your best in an Arrow shirt . . . there's good reason. Cluett, Peabody & Co., Inc., maker of Arrow shirts, puts full emphasis on highest quality production. And that's the major reason they have adopted the *Solvay Activated Hydrogen Peroxide Bleaching Process.* It produces better hand and superior whiteness without harm to the goods.

Like Cluett, Peabody & Co., Inc., you can use the Solvay Activated Hydrogen Peroxide Bleaching Process to obtain higher quality, whiter cottons at no increase in cost. Or, if you prefer, you can get whiteness equal to your present results with a marked decrease in chemical costs.

Although the Solvay Activated Hydrogen Peroxide Bleaching Process is a relatively new method developed by the Solvay Process Division for bleaching cotton, it is already in full-scale, commercial operation in a number of plants. It is available to you under royalty-free license.

Solvay technical service is available, without obligation, to help you evaluate this new process for your plant. Or, send for Solvay's free booklet which gives a complete description of the techniques and results you can expect.

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larly on fine denier tow, the alternate procedure employing the Pad-Fix method is of considerable value in producing level dyeings with good fastness to crocking.

Conventional Dyeing Procedure. The normal procedure in conventional dyeing is to wet out the tow by passing it through a bath containing about 0.5 oz/gal Alkanol HCS surface active agent. It is then passed through squeeze rolls and piddled into a perforated rawstock basket previously lined with cloth or netting. The basket is placed in the machine and the tow dyed at 250 F by conventional procedures.

Alkanol HCS in a concentration of 0.5 to 1.0% and 1.0 to 2.0% Avitone T softener are recommended to aid leveling. In addition to these agents, and particularly for the lighter shades, the most level dyeing disperse dyes should be used.

Pad-Fix Procedure. This procedure is similar to conventional dyeing with the exception that the wet-out bath is replaced by a pad bath containing a predetermined amount of dye. The tow is padded through the dye dispersion and then placed in the rawstock basket for subsequent dyeing by conventional methods.

An important advantage of the Pad-Fix method is that, in heavy shades, filtration of the dye is greatly minimized and level dyeings with generally good crocking fastness are obtainable.

A developed black shade, produced effectively by the Pad-Fix method, has been about one of the most important shades on tow, constituting approximately 70 to 80% of all the tow dyed. The shade is made as follows:

Developed Black

(Quantities based on 100% pickup in padding)
4.00 oz/gal-3.5%(owf) Latyl Diazo Black B
2.56 oz/gal-2.0% (owf) DuPont Naphthanil AS-D
2.0 oz/gal Compound No. 8-S
0.24 oz/gal Alkanol WXN surface active agent
0.16 oz/gal Keltex (Kelco Company)

Mix the Keltex with twice its weight of alcohol by stirring well, add cold water, and stir until a smooth paste is obtained. Dilute the Compound No. 8-S with hot water, add the Latyl Diazo Black B and the dry Du Pont Naphthanil AS-D, and stir until well dispersed. Add the solution of Keltex and the Alkanol WXN and dilute to volume with hot water.

Pad the tow with the above dispersion and place the tow in a perforated basket. Load the basket into the dyeing machine, add just enough water to permit circulation, and start the pump.

When dyeing Dacron type 64, add anhydrous sodium sulfate, as required, at this point. Adjust the pH to 6.0 then heat to 250 F in one hour, run for one hour at 250 F, then cool and rinse. Scour, diazotize, scour, and rinse in the normal manner.

With either the Pad-Fix method or conventional dyeing, every effort should be made to load as much tow as possible into the basket to minimize packing and subsequent channeling during the dyeing cycle. The tow packs to a considerable extent during dyeing, being most severe at 200 to 250 F where optimum exhaustion also occurs. It is not unusual for the volume of the fiber mass to be reduced from 30 to 50% of its original form from the beginning to the end of the dyeing cycle.

Where both inside-out and outside-in circulation is used, the following technique is recommended for minimizing channeling: (1) Raise temperature to 225 F and run for 30 minutes—most of the packing will occur during this period; (2) depressurize, open machine, and insert sleeve to cover exposed perforations in the center spindle; (3) raise the temperature to 250 F and dye for 1½ hours.

Based on preliminary work, it is expected that packing can be minimized in machines with top to bottom circulation by reducing the flow rate to a minimum.

FINISHING

Satisfactory processing of the tow through the Pacific Converter requires that a suitable finish be applied after the tow is dyed. Two methods for applying the finish are by spraying or by exhausting in the dye kettle. The spray finish has given consistently better results and is recommended.

Spray Finish. A spray finish is applied by positioning a spray head between two sets of squeeze rolls. The tow is sprayed as it leaves the first set of rolls and before it enters the second set of squeeze rolls (which should exert less pressure than the first set). The gear pump supplying the finish through the spray should be driven by the rolls so that the amount of finish can be carefully controlled. The quantity of finish to be applied depends upon the fiber (type 54 or type 64), the color, the spinning system to be used, and the denier-per-filament; generally 0.5 to 1.0% Nopco 2152-P is sufficient. Dacron type 64 requires more finish than type 54. Also, the finer deniers (1½ and 3) of both types of Dacron require more finish than the heavier deniers.

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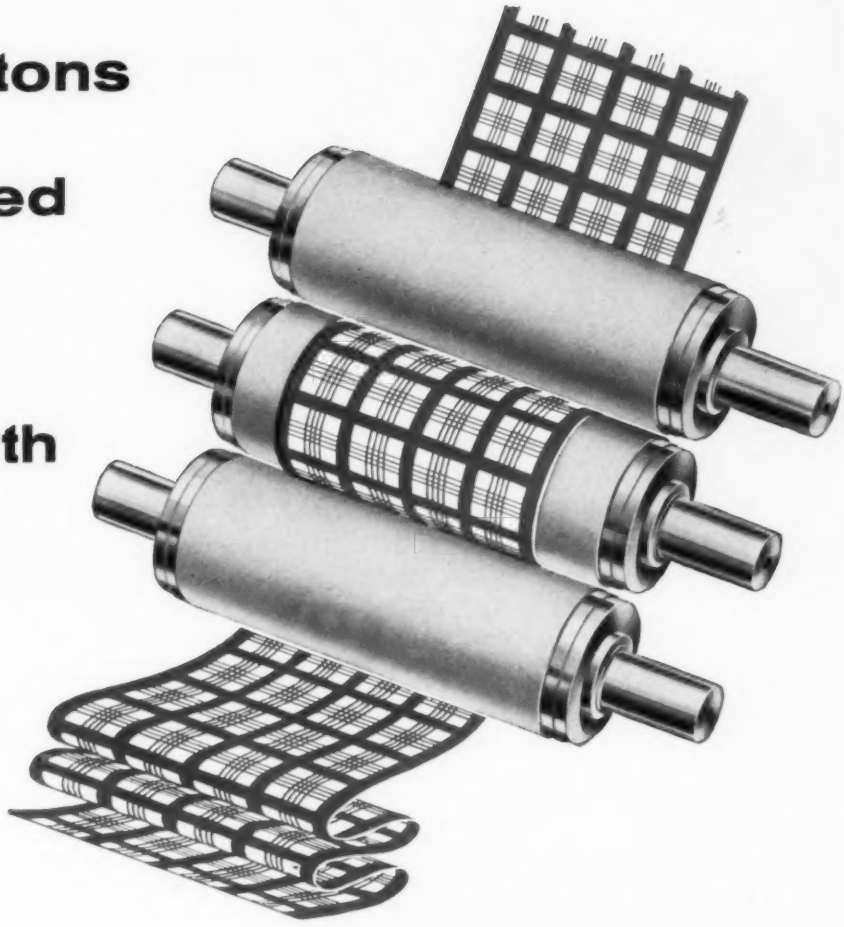

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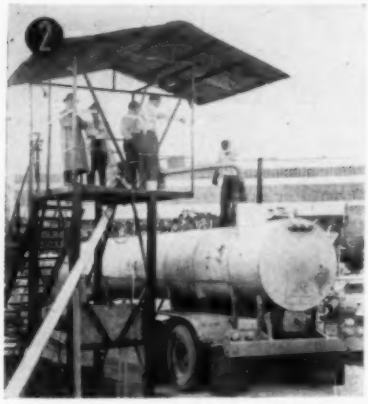
Believe it or not... they buy caustic by the barge-full



■ YES! Riegel Textile Corp. is now purchasing a barge full (192,000 gallons) of caustic soda at a time for its Trion, Ga., dyeing and finishing plant, according to an article in "The Trion Facts," a weekly community newspaper published by the firm.

How does a barge get to an inland Northwest Georgia town?

It doesn't, but the caustic does, and here's how:

PHOTO 1. This 196-foot-long barge, pulled by a small tugboat, brings the caustic to Chattanooga, Tenn., from Muscle Shoals, Ala., a distance of 160 miles. Caustic is pumped from the barge into tank trucks (Photo 2), hauled to Trion (40 miles south), and placed in a 250,000-gallon storage tank (Photo 3).

PHOTO 2. Workmen load one of the three 3,000-gallon tank trucks with caustic for delivery to Trion. This scene is on the dock at 19th Street on the Tennessee River. Unloading the barge is a big operation,

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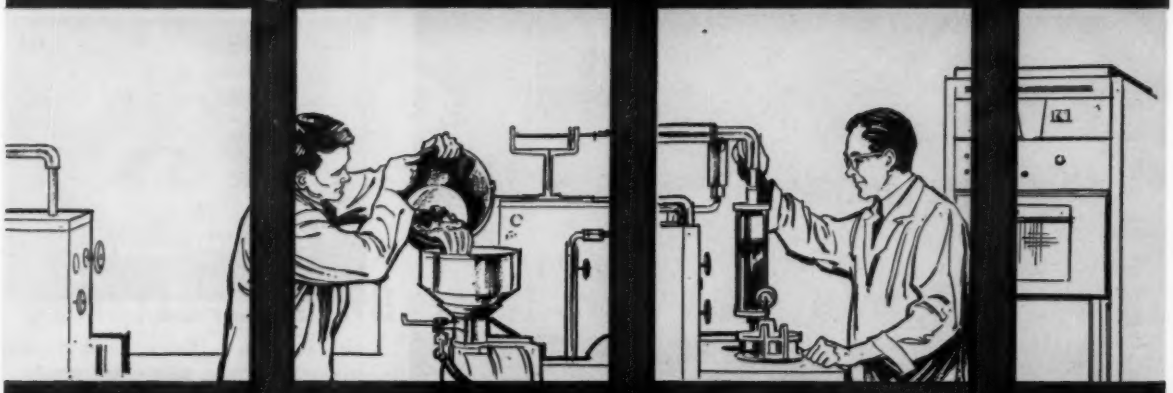

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CAUSTIC POTASH 45% and 50% Liquid; Flake **SODA ASH** Light, Intermediate and Dense Grades

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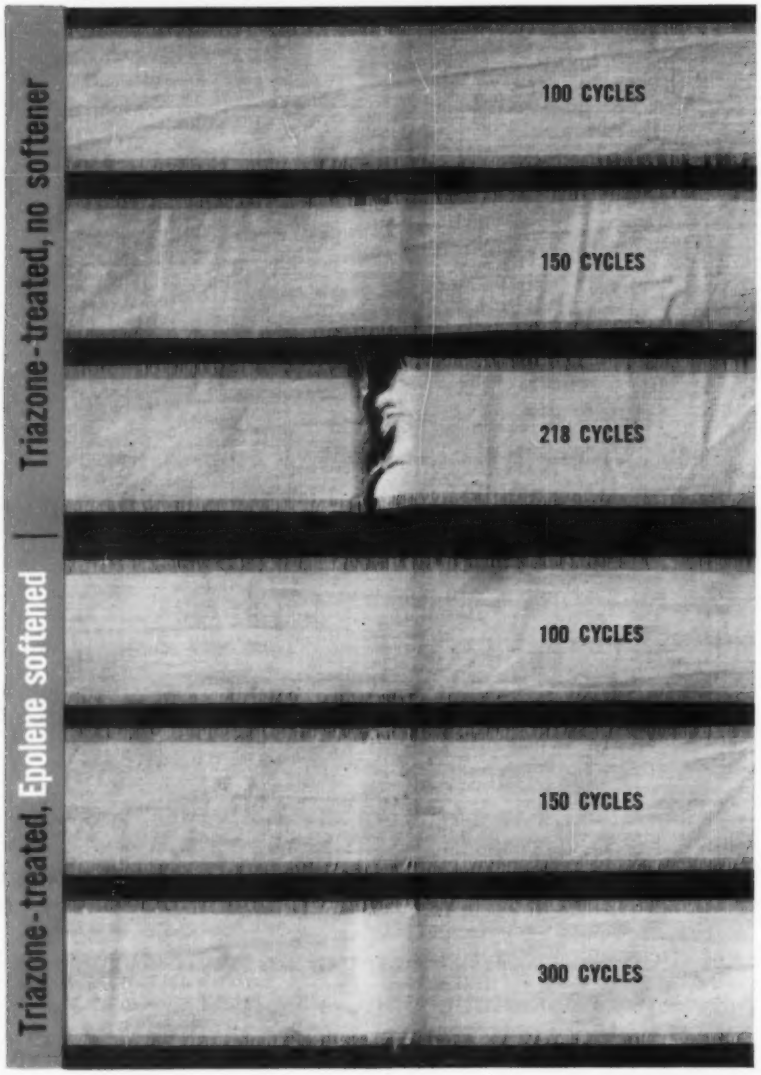
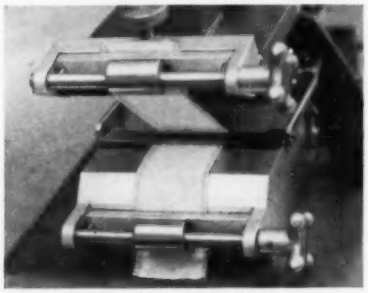


IT is axiomatic in the textile industry that the finishing resin alone does not a wash-and-wear fabric make. In fact, the variables are many, and often complex.

Of primary importance is selection of the softener. If properly chosen to match the specific type of finishing resin to be used, the combination can provide the optimum in tear strength, abrasion resistance, crease recovery, hand, and sewability for the treated fabrics.

Eastman offers three emulsifiable types of polyethylene resins for use as softeners... Epolene E-10, Epolene E-11, and Epolene E-12. These low-molecular-weight polyethylenes are suitable for either nonionic, anionic, or cationic systems, easily forming emulsions that are stable and low in color.

Epolene polyethylene emulsions have been evaluated under operating conditions with all of the principal wash-and-



Stoll-Flex Abrader

wear resins in use today. These include triazone, triazene, melamine formaldehyde, methylated melamine formaldehyde, dimethylol ethylene urea, and methylated urea-formaldehyde type finishing resins. The results of these test procedures are available to aid you in selecting the right softener for your finishing requirements.

For further information about Epolene textile emulsions, their preparation and use, contact your Eastman representative, or write Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tenn.

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requiring about three days and 68 trips.

PHOTO 3. At Trion caustic is unloaded from the tank truck and pumped into the storage tank (upper left). Underground pipes convey caustic from storage tank to mill as it is needed.

Solvent dewaxing

(from page 126)

follow, it could be modified or shortened; or perhaps even replaced in some instances by a considerably shorter continuous operation.

It may be that solvent extraction also has possibilities for success in preparing fabrics and blends of man-made fibers. But in the cotton industry, where economical methods of preparation already exist and the squeeze on finishing profits has never been more severe, any new process must first pass the test of economics and offer besides an improvement in quality beyond that already being attained.

Acknowledgment

Data on the I.C.I solvent extraction process, including the table and the drawing, were taken from an article, "Use of Trichloroethylene in Continuous Scouring and Bleaching of Textiles," by W.A.S. White, H. J. Ross, and N. F. Crowder, of Imperial Chemical Industries, Ltd. The article was published in the *Journal of the Textile Institute*, Vol. 50, No. 617, June/July, 1959, and that part of it which appears here is reprinted with the permission of the Institute.

QUALITY DYEING MACHINES FOR QUALITY DYEING

KWG STAINLESS STEEL PADDLE WHEEL MACHINE

These versatile machines handle all fabrics in either strip, or finished form, also hosiery and tapes.

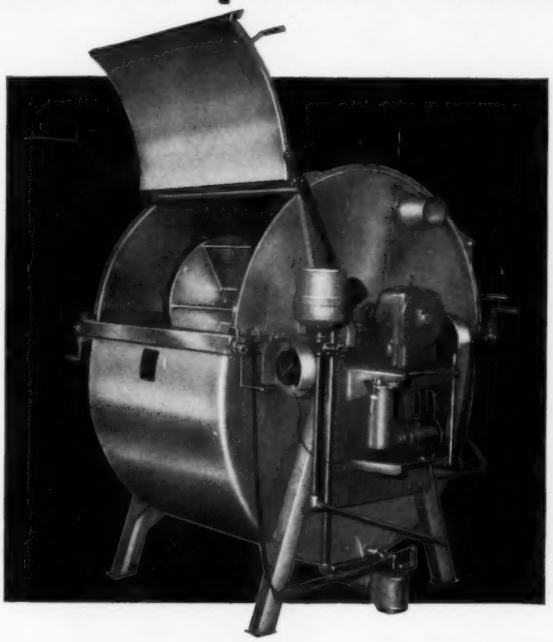
Available with or without covers and indirect heating coils.

- **Heavy gauge, stainless steel construction.**
- **Rounded corners eliminate dye traps, increase strength.**
- **Sizes from 2 to 850 pounds capacity.**

Skein dyeing machines 75 to 1000 lb. capacity.

Zipper tape and narrow fabric skein dyeing machines 100 to 500 lb. capacity.

KWG DUO-FLO Circulating Type skein dyeing machines for high bulk orlon, other man made and natural yarns.



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TEXTURED IMPRESSIONS... *Unlimited*

Fabrics knitted on the Wildman Jacquard JSD circular knitting machine create lasting impressions in the outerwear line. UNLIMITED pattern range enables fabrics to be knitted that are classics in design and texture.

Double Piqué . . . Twill Back . . . Blister . . . Rib . . . Tuck . . . Two-Three-Four Color Welt Back Fabrics. Ideal for high production of unique fabrics. Ask for complete details on this new model, the JSD.

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A subsidiary of Draper Corporation, Hopedale, Mass.

JSD

The only circular knitting machine using a true Jacquard patterning mechanism.

KNITTING SECTION

What F-F hosiery mill management can do to

control picks & pulls

by R. D. Brackett
Exclusive

A good starting place is the knitting machine. Oil sinker heads and needles twice daily.

PICKS AND PULLS from handling full-fashioned grey goods are a well-known headache. And while there is no known way to eliminate the hazards of handling hosiery, damage can be controlled by diligence, by special effort. Such damage control must start in the knitting room:

Hand Care. Supply the operatives with emery boards as a step toward control of rough hands. The operative must resort to some barehanded handling, so encouraging him or her to use skin lotions routinely will pay dividends. Make jewelry and watches that can snag strictly taboo. Rough nails are particularly bad offenders.

Special nylon and cotton gloves are available, so supply the operatives with them and make sure they wear them as they take

Franklin Colorbred Yarns

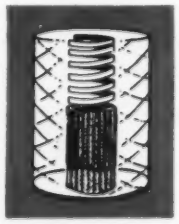
Trade Mark

Just as Franklin Colorbred Yarns prove their quality by delivering properly at the knitting machine, or in warping or winding, and by standing up to the finishing operation, so do they prove their quality to the retail buyer in many ways:—shades in step with fashion trends, uniform dyeing and even superior "hand" in some cases.

If you would like to know more about shades that are in step with fashion trends, ask us for our latest seasonal color card.

In case you don't know why Franklin Colorbred Yarns are uniform in shade, it's because of the Franklin Compressible Spring Package. Soft packages compress more and hard packages less into a column of uniform density. Uniform penetration of dye liquor and uniform shades consistently follow.

If you would like to know more about superior "hand", ask us for the story on FLUFDYED Hi-Bulk Orlon (Dupont's acrylic fiber).



X-ray view of Franklin Package—the "secret" of uniform shades. Don't say "package dyed". Say . . . "FRANKLIN COLORBRED"

*Fashion-Right and Quality Controlled

Franklin Process COMPANY

Largest Package Dyers in the World of Natural and Synthetic Fiber Spun Yarns for More than Half a Century

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stockings away from the machine and as they tie them.

Machinery Care. On those parts of machinery that the stockings normally touch, remove every last burr or rough spot that is large enough to do damage. Once this is completed, make sure that the operatives have equally smooth places to receive the finished stockings. Using any old cabinet top or table is inviting real damage.

Apply a light coat of needle oil to sinker heads and needles once or twice each shift.

Steamer-Handling Care. Steaming the stockings immediately after taking them from knitting will help eliminate some damage. And if the older tray system is still in use, be especially careful.

This system requires the operative to place his work in trays, in lots of a dozen pairs. A second person transfers these from the trays to a rack prior to their being placed in the steam box. This means that each dozen has to be handled more than once, and there is inevitable damage. Many mills have replaced this system in the interests of both efficiency and damage.

Provide each operative with racks and a place to hang them. Have the operative place the goods on the rack and at the end of the shift have him place them on the carriage they will enter the steam box on.

This is not an extra hardship for the operative, and it certainly helps reduce picks and pulls. It also relieves one man from the unnecessary job of handling them after the operative lays them down.

Picks and pulls are to be expected to some degrees, but they should remain under two per cent. If they go higher supervision is letting up.

How to reduce pilling and soiling of Orlon knit goods

■ COLLOIDAL alumina, an inorganic compound, has been found useful for finishing knit goods made of Orlon Type 42 acrylic fiber, according to a recent Du Pont bulletin.* Applied after piece dyeing or to ingrain knitwear during wet finishing, the alumina reduces the rate of pilling and soiling, improves garment cutting, reduces glazing, and improves elasticity, the report states.

Two commercially available aluminas are said to have been found useful: (1) "Bymal," a fibrous colloidal alumina marketed by the Industrial and Biochemicals Department of Du Pont, and (2) "Alon" C, hydrous aluminum oxide marketed by the Cabot Corp.

The dissimilarity in particle shape of the two aluminas leads to a very noticeable difference in the hand of the finished goods, the report states. The fibrous Bymal imparts a much softer hand than that obtained with the spherical Alon C which gives a "bitey" hand and goods with body. Alon C can be used as a scropping agent on fabrics made from filament yarns. Percentages of 0.1 to 0.25%, on weight of goods (OWG), of Alon C impart a silk-like feel to knit dress goods of Orlon Cantrece without stiffness or boardiness. For fabrics of spun yarns, Bymal is preferred for women's wear and Alon C for men's wear.

By specifying particle shape, varying the amount of alumina applied, and, finally varying the amount of softener used to finish the goods, a wide spectrum of garment aesthetics can be achieved from a given base fabric, the report states. The amount of alumina needed also will depend upon garment or fabric construction and fiber denier.

The alumina finish is not removed by washing, but Bymal is deactivated by soap washing. Bymal-treated garments should be washed with detergents only.

How to Apply Alumina. The water used for alumina treating bath must be essentially free of polyvalent anions, especially sulfates, carbonates, and phosphates that precipitate positively charged alumina dispersions. Cations, or monovalent anions such as chloride, do not normally interfere.

If a source of deionized water is not available, the water must be treated in the washer or dyeing machine before the alumina is added. (Method for treating the water, including test for sulfate content, is given in the bulletin.—Eds)

After Piece Dyeing. Following is the method given for applying alumina to knit goods after the piece dyeing operation:

1. Scour and dye as usual; then rinse well.

2. Set a bath cold and adjust to pH 4 to 5 with acetic acid.

3. Add 0.5 gm/gal barium chloride to precipitate sulfates. Check with alumina to determine if bath is stable. If it is not, add more barium chloride until bath is stable.

4. Weigh out 0.1 to 0.5% alumina (OWG), disperse[1] with conditioned water, and add to the washer. Bring bath to 130 F and run for 15 min.

5. Drop the bath and finish with 1.0 to 2.0% (OWG) cationic softener[2] at 120 F for 20 min.

6. Extract by centrifuging.

7. Tumble dry at 160 F, run cooling to 100 F.

During Wet Finishing. Following is the method given for applying alumina to ingrain knitwear during the wet finishing operation:

1. Scour to remove excess knitting oils and set a fresh bath at 130 F.

2. Adjust to pH 4 to 5 with acetic acid.

3. Add 0.5 gm/gal barium chloride to precipitate sulfates. Check with alumina to determine if the bath is unstable. If it is not stable, add more barium chloride until bath is stable.

4. Disperse 0.1 to 0.5% (OWG) of alumina and add to the washer in portions to insure even distribution.

5. Operate the washer for 5 min.

6. Add the cationic softener and run for an additional 10 min.

7. Cool the bath with cold water by overflowing; extract, and dry the goods.

*Bulletin OR-108 (February 1961), entitled "Inorganic Finishes for Knitwear of Orlon Acrylic Fiber."

[1]Alumina is best dispersed by addition to 3 to 5 gallons of conditioned water in ratio of 20 lb of water to 1 lb of alumina. Mix with electric stirrer or by pouring conditioned water from washer at a height of 5 to 6 ft into the container. This scatters alumina particles and disperses them readily, after which dispersion is added to bath.

[2]"Sapamine" OC (Ciba) and "Ceranine" HC (Sandoz) are compatible with alumina.

SINGLE LAYER TENTER FRAME
with combined pin-clip chain permits speeds up to 250 yards per minute. Integral gas heating system within housing or steam radiators provide maximum drying or setting at greatest efficiency.

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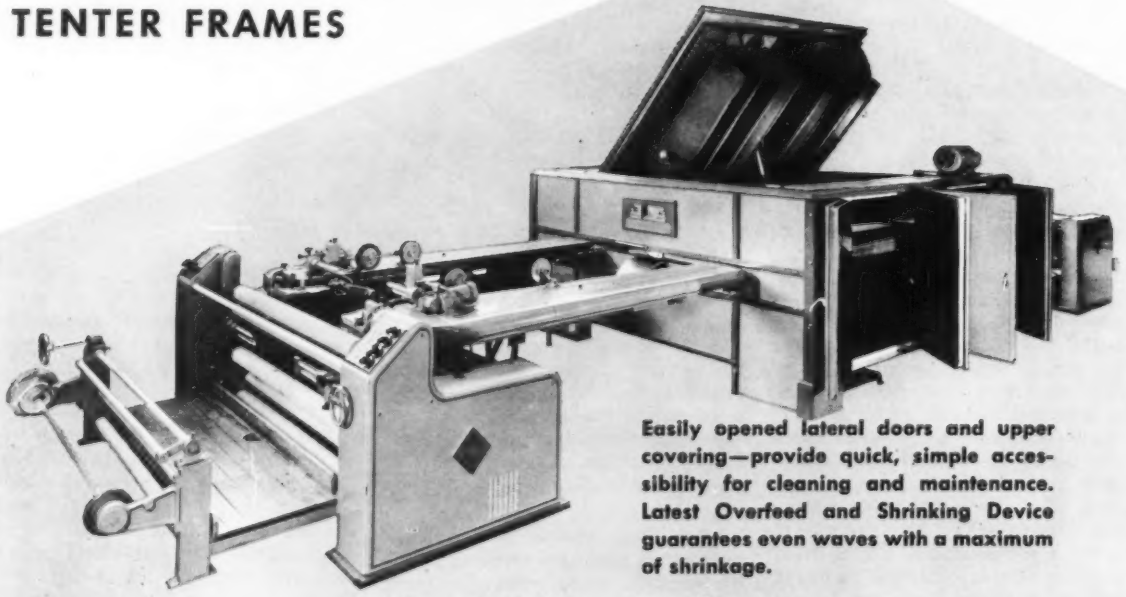

Easily opened lateral doors and upper covering—provide quick, simple accessibility for cleaning and maintenance. Latest Overfeed and Shrinking Device guarantees even waves with a maximum of shrinkage.

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Remedy for uneven stitches

on SCP, SCOP, CK-A, and other multifeed circular hosiery knitting machines

by Winston Shewmake
Exclusive

CIRCULAR hosiery knitting machines that have more than one yarn feeding station positioned above a single set of knitting cams present a problem in maintaining a balanced stitch within the sock fabric.

With the recent advent of additional multifeed machines within the hosiery industry, knitting a smooth quality fabric has become more critical, unbalanced knitting more prevalent.

The problem of maintaining even stitches within a single-feed machine is relatively simple when compared with that of multifeed

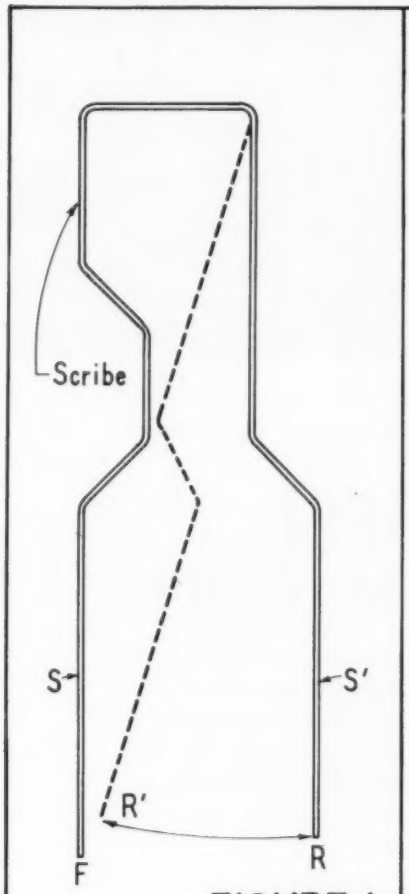


FIGURE 1

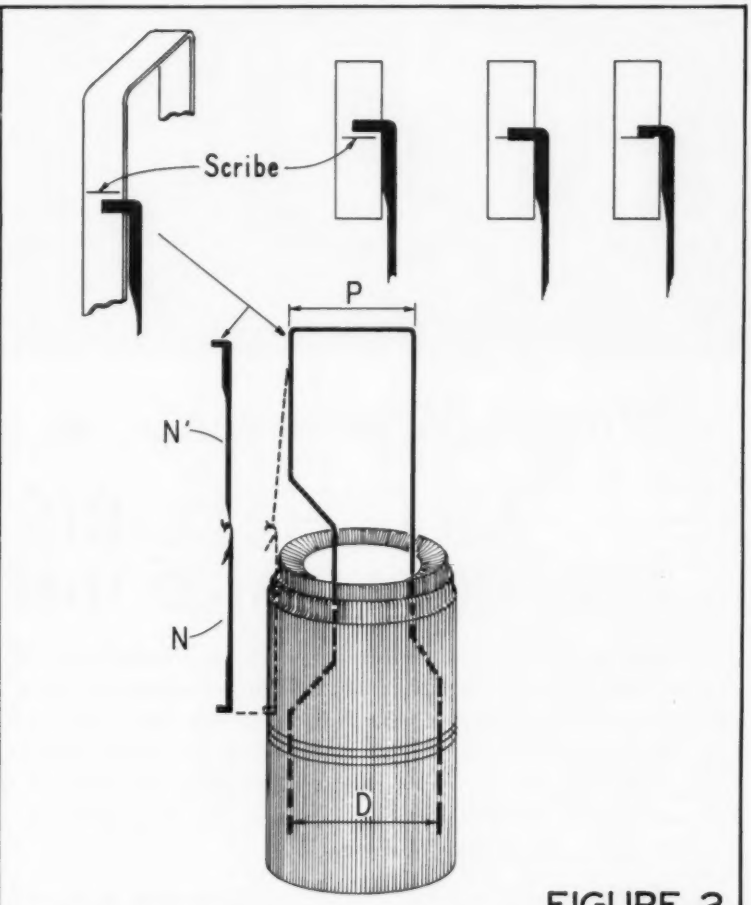


FIGURE 2

FIGURE 3

FIGURE 4

FIGURE 5

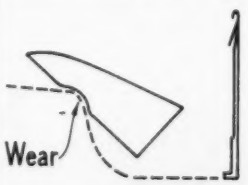
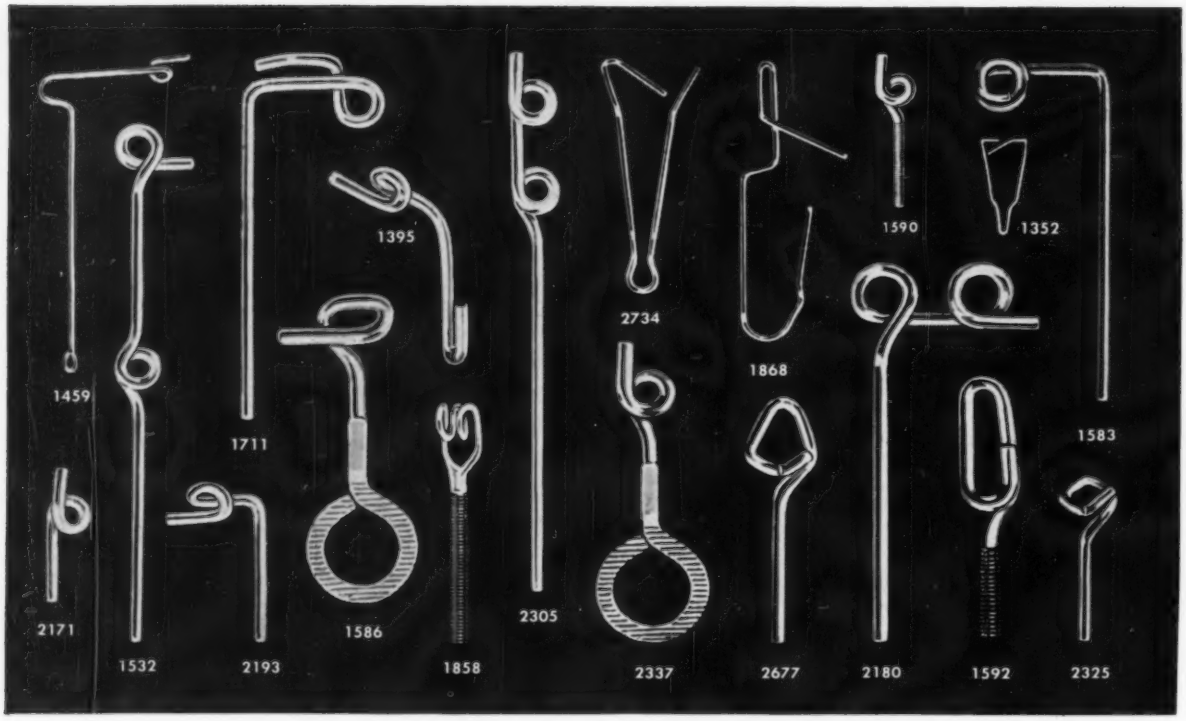


FIGURE 6



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Special care is employed in the plating of Mitchell-Bissell Chromium Plated Steel Wire Guides to assure maximum density, hardness and uniformity. Our methods of fabricating and polishing develop a surface smoothness far beyond usual commercial standards. Because of their superior resistance to thread wear, these guides have proven ideal for processing all modern synthetic fibre yarns and blends. More than 3,000 patterns. Special patterns to your specifications. Can be supplied in mirror, satin or matte finish. Samples and Catalogs on request.

"PERFECTION" GRADE. Guides are available to meet conditions demanding finish and plating well beyond the usual standards. These are truly *premium* guides, representing the ultimate in wire thread guide plating.

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MITCHELL-BISSELL CO.

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Southern Representative: HOLT ASSOCIATES, INC., *Greensboro, N. C.*

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machines. Within a single-feed machine, one has to match a reversing knitting cam with a running cam.

In a multifeed machine every knitting cam must be exactly balanced with each of the other knitting cams so that the knitting needles will form the same length of stitches at each knitting station. This is true in both forward and reverse strokes. Therefore, the problem becomes even more magnified.

The solution to the problem of uneven stitches is quite simple in theory: keep all knitting cams horizontally even. In practice, however, constant maintenance of these cams in a level position is not so simple since many factors tend to displace their initial settings and since conventional means for gauging stitch cams is difficult.

Wear upon a stitch cam is one factor which will result in unbalanced knitting. Due to the fact that some of the various knitting cams are used more than others, in a multifeed machine, there exists an uneven ration of wear between the parts. This will manifest itself in a gradual tightening of stitches at a given station.

Wear on knitting cam surfaces usually appears at the lower extremity of the knitting cam *(Figure 4)* or along the contact area of the stitching angle on the stitch cam leading edge *(Figure 5)*.

This condition often "fires" a needle away from the cam surface and below the lower extremity of the knitting point *(Figure 6)*, thus resulting in a longer stitch than was intended. Such a cam should be replaced with a new part, or removed from the machine and properly re-surfaced. (Knitting cams should be kept mirror-smooth at all times.)

Excessive friction and unintentional forces against the knitting cams also tend to displace them from their correct settings. This can manifest itself in anything from a needle which is too tight in the cylinder wall, to a "smash up" which invariably will displace one or more of the knitting cams.

It is apparent that knitting cams are constantly being forced or worn out of alignment in a knitting machine during its operation, and the condition is more evident in multifeed machines. These parts must be observed closely and kept aligned if quality goods are manufactured.

The job can be done easier and faster by correctly using a gauge such as illustrated in *Figures 1* and *2*. This gauge eliminates the trial and error method of raising or lowering a cam and depending on luck to produce the desired results. It also eliminates the use of stitch gauge blocks which are difficult to manipulate under the knitting cams due to other projecting parts and assemblies. To make this gauge, proceed as follows:

1. From a piece of ½" by ⅛" mild spring steel, cut a length which will extend into the knitting cylinder and protrude slightly in excess of a needle length above the cylinder. *Figure 2.*

2. Make the top portion of the gauge (P, *Figure 2)* equal to the inside diameter of the stitch ring.

3. Form permanent bends in the steel stock as in *Figure 1.*

4. Depress the gauge ends (F & R, *Figure 1* dotted line) and insert the gauge into a cylinder. Resiliency of the steel will retract the sides (S & S',*Figure 2*) against the cylinder wall with sufficient tension to hold it in place.

5. Hook a needle into the hook of a cylinder needle *Figure 2* and scribe a line along the butt of the gauging needle *Figure 2.*

6. Revolve the knitting cylinder slowly, being careful not to disturb the gauge, and level all cams by aligning the upper needle butt with the scribed mark on the gauge. This alignment occurs when the cylinder needles are at their lowest extremity or at the knitting point on the stitch cams.

In *Figure 2*, "A" indicates a stitch cam which is too high and which will produce in the knitted fabric stitches that are too tight in relationship with the other cams. "B" indicates a cam which is too low and will produce stitches which are too loose. "C" indicates a correct setting.

In matching the needle butt with the scribe mark on the gauge, either the top or the bottom of the butt may be used. If a cam is known to be correct in the machines and it is desired to match all other cams to the level of that particular cam, merely slide the gauge up or down within the cylinder wall until the scribe mark will match a needle resting at the lowest extremity of the correct cam. Then proceed to level all other cams as described above.

Fixers should be consistent in their struggle for quality. A multitude of stitches comprise a knitted sock, and day by day follow-through in equalizing stitches will not only insure a fixer's success but it will enhance the continued sale of the manufactured goods.

News briefs

(from page 21)

More Summer Courses. Additions to the list of textile short courses to be presented this summer: A cotton classing short course for ginners, buyers, and classers will be conducted by N.C. State College's School of Textiles at Morehead City, N.C., June 19-30. Lowell (Mass.) Technological Institute will hold three classes: workshops in fiber and yarn technology will meet June 12-23, fabric technology June 26-July 7, and dyeing and finishing technology and textile testing July 10-21. Clemson (S.C.) College School of Textiles will offer courses in yarn manufacturing, fabric development, supervisor development, quality control, and time and motion study beginning June 12.

Wool Awards. This year's Golden Fleece awards of the National Association of Wool Manufacturers went to Louis C. Pfeifle, president of the American Institute of Men's and Boys' Wear; William C. Segal, publisher, and Mrs. Segal, editor, of *American Fabrics;* and Edgar Wherry, president, Bonwit Teller.

Japan Hits Canada, Too. Japanese clothing and textiles sold in Canada last year displaced more than 10,000 workers (out of an industry that employs 168,000), according to D. Rosenbloom, executive director of the Canadian Apparel & Textile Manufacturers' Association.

New officers of National Association of Hosiery Manufacturers (l-r): CURT SEIFART, treasurer; CHARLES W. McCRARY, board chairman; W. F. WILLIAMSON, president; and ALFRED P. SLANER, second vice-chairman. Not shown: GORDON HANES, first vice-chairman; REUBEN C. BALL, vice-president and secretary; and MATT KURTZ, assistant secretary. Officers' terms are for one year.

Hosiery costs going up

Labor costs will go up 15¼% if minimum wage goes to $1.25, NAHM told

Staff report

LABOR COSTS of the sock industry will rise 15¼ per cent if the minimum wage is established at $1.25 per hour, Claude M. Cox told those attending the 57th annual convention of the National Association of Hosiery Manufacturers, held in Atlantic City in conjunction with the Knitting Arts Exhibition.

Direct labor costs for operatives producing goods on an incentive basis will rise 17.86 per cent, and the cost increase for indirect labor on an hourly rate will be 12.17 per cent.

Over-all costs will increase 8⅓ per cent and indirect labor costs will increase 6.19 per cent, while direct labor will go up 9.53 per cent if the minimum wage is established at $1.15 per hour.

Raising the minimum wage will increase the cost of packaging, inventory, insurance of inventory, and the amount paid in sales commissions, Mr. Cox, of Price Waterhouse & Co., management consultants, indicated. His findings are based on analyses of eight hosiery mills of different size, in eight different locations, and producing different kinds and qualities of hosiery. The study, incidentally, indicated that most mills need better cost records.

Willis H. Slane, Jr., retiring chairman of the board, told about 400 hosiery industry representatives attending the meeting that the hosiery outlook has seldom been brighter, indicating that this industry has come of age.

"There are those who say 'I can't afford to merchandise my line—I can't afford a good cost system—I can't afford to modernize my mill—I can't afford to belong to the National Association.' I say that they can't afford *not* to merchandise—*not* to have a good cost system—*not to* modernize—*not* to belong to the National Association. Those who do not will some day make it easier for those who do. They will be out of business and those left will divide up more profitable business," Mr. Slane said.

Volume Maintained. W. F. Williamson, president of the Association, told the group that volume has been substantially maintained with a material lessening of really destructive competitive practices which had created chaos in the industry. Mr. Williamson indicated that poor business conditions in the knitting industry were entirely self-made.

The general feeling is that the President will try to be helpful; Congress has been more conservative than expected up to now, but will endorse minimum wage increases, expanded social security, liberalized pensions, etc. Cost of business will go up on account of all these things and business had better plan accordingly.

"In the political field, there is

Attendance at annual NAHM banquet was the best yet — 320 members and guests were present.

nothing to be particularly happy about and nothing to justify any particular fear. If we in hosiery continue to sell goods at a profit and produce only what we can sell, we'll do continually better," Mr. Williamson concluded.

A. C. Layton Newsom of The Durene Association of America explained that we have seen actual progress in the sales of socks and anklets, and this progress will allow the industry to move ahead again in the 60's, after a decade of stagnation. A constructive change in the attitude of retail management toward this half-a-billion-dollar business should help, according to Mr. Newsom.

The pacesetters are: filling out their limited selection; no longer tolerating abominable merchandise presentations—cubbyholes of confusion that make self-selection by customers impossible; providing sufficient space to get the business; recognizing that socks and anklets are impulse items; using price signs that sell; selling larger quantities per customer; producing a greater volume for the same cost, he explained.

Seamless Trend. Bertram J. Lange, senior consultant, Marketects, related his findings about the change and trend toward seamless hose for ladies. After talking with representatives of the industry, department stores, and the public, he concluded that the style change was a new customer convenience and represents a basic change and not a simple fashion change.

"You are in the leg covering business, and from this base you should not be concerned for one moment whether full-fashioned or seamless dominates the market," Mr. Lange said.

So long as unbranded merchandise continues to represent a substantial majority, control of volume and profit structures remains out of hand. A store's net profit is customarily greater on branded lines than it is on unbranded lines, Mr. Lange emphasized.

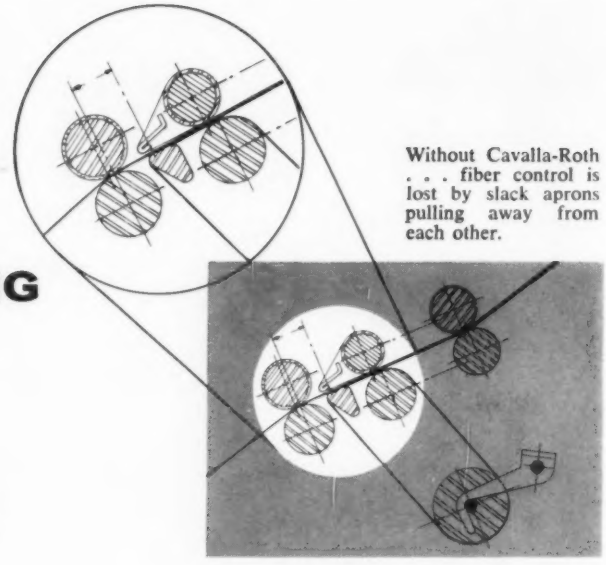
DAN MAY, president, May Hosiery Mills, Nashville, Tenn., proposed a uniform costing system, with no selling below cost, as a cure for some of the industry's ills.

HOWARD KAISER, president of Burlington Industries Hosiery Mills, reported on NAHM recommendations for improved hosiery merchandising, disposal of surplus full-fashioned

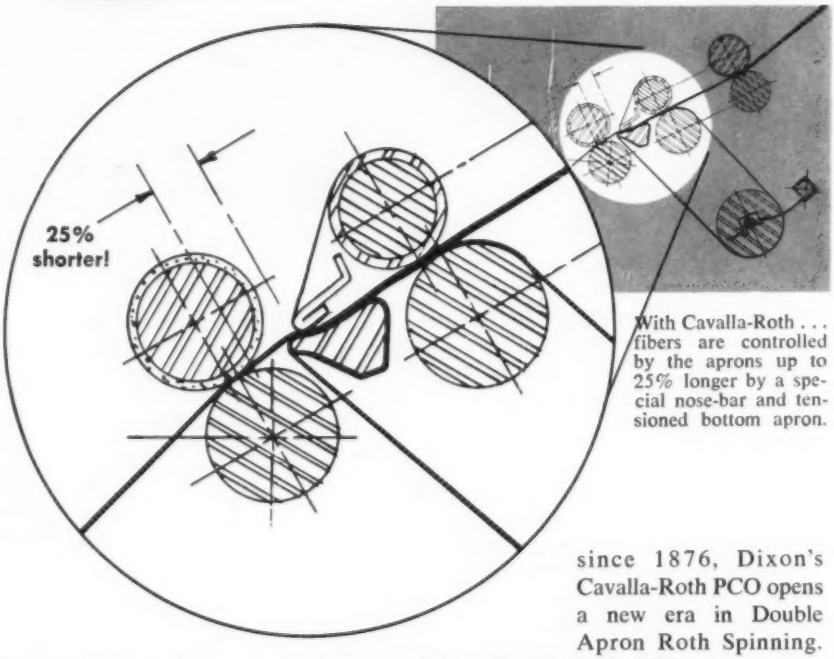
ALFRED P. SLANER, Kayser-Roth Hosiery, presided over divisional meeting of women's hosiery producers.

ADVANCE YOUR DUO-ROTH® SPINNING WITH DIXON'S NEW CAVALLA-ROTH*

PCO



Without Cavalla-Roth . . . fiber control is lost by slack aprons pulling away from each other.



With Cavalla-Roth . . . fibers are controlled by the aprons up to 25% longer by a special nose-bar and tensioned bottom apron.

Now . . . with Dixon's Cavalla-Roth PCO (partial changeover) . . . mills using Duo-Roth Spinning can obtain greatly improved fiber evenness and strength with very little investment per spindle. Cavalla-Roth consists of a scientifically-shaped apron nose-bar coupled with a spring tightening system for the lower apron.

Cavalla-Roth PCO assures controlled spacing between top and bottom aprons at the point of fiber exit . . . reduces up to 25% the uncontrolled space between the nip of the aprons and the bite of the front rolls. Because the bottom apron is spring-tightened, Cavalla-Roth PCO also insures full contact between the two aprons along their entire surfaces — for better fiber control!

Cavalla-Roth PCO results in markedly improved yarn quality . . . sets a new high standard of comparison for the industry. Equipment requires but a few minutes for installation — and is very economical. Based on experience gained in manufacturing drafting changeovers since 1876, Dixon's Cavalla-Roth PCO opens a new era in Double Apron Roth Spinning. See for yourself how Cavalla-Roth PCO can give you more uniform, stronger, finer quality yarns . . . make an installation on your frames now!

For details write

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*Pat Applied for

Ⓡ Saco-Lowell T.M.

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ENGINEERED SPINNING CHANGEOVERS SINCE 1876

For further information use Handy Return Card, Page 187

HOW OTHERS MANAGE

Ends-up stop motion for No. 50 winders

THE EDITORS:

Our No. 50 winders are equipped with mechanical stop motions that allow us to wind three ends up. But some of our customers request as many as nine ends up. This shop-built stop motion solved that problem for us; conceivably it can be made to accommodate any reasonable number of ends. To assign enough help to guard the running ends without benefit of a stop motion was out of the question, of course.

Also, we had the choice of making a stop motion knock off the winder motor when a break occurred at one of the ends. But since that type of motion stops the entire winder frame, we junked the idea and settled for the present system. It stops only the head the broken end affects.

Each winding head, or delivery, will require:

One step-down transformer—550 volts to 12 volts

One 12-volt solenoid

Three 8¾″ lengths of ⅛″ brass welding rod

Fourteen ⅛″ 40 NC* hex nuts.

One 8¼″ length of ¼″ steel rod threaded ¾″ on each end and fitted with two standard nuts at each end

Two pieces of hard plastic (laminated fabrics) 3¼″ x 3¼″ x ½″

Four No. 9, ¾″ wood screws

Two pieces of ¼″ x ¾″ flat iron approximately four feet long (for 6-head machine)

One piece of 1″ x 2″ x ⅛″ angle iron approximately four feet long (for 6-head machine)

Two pieces of 1/16″ steel welding rod

One 12″ length of ¼″ x ⅝″ keysteel

Nine warper stop motion drop wires fitted with eyelets

Ten feet of #18 stranded copper wire

One 3/16″ U bolt 1¼″ long

Thread the three brass rods ¾″ from each end, using a 40 NC* die. Bore the holes in the fiber blocks according to *Figure 1*. In that diagram, A is drilled to receive one of the ⅛″ rods as a support or "frame" member; holes B and C receive the other two ⅛″ brass rods that are to form conductors

*40 threads per inch, national coarse.

REACH FOR THAT IDEA NOW. THEN . . .

. . . enter one or more kinks, short-cuts, time savers, or quality improvement suggestions in TEXTILE INDUSTRIES Kink Contest which closes August 15. Winner of the contest gets $100, in addition to payment at present space rates for all items accepted for publication.

The contest rules are simple:

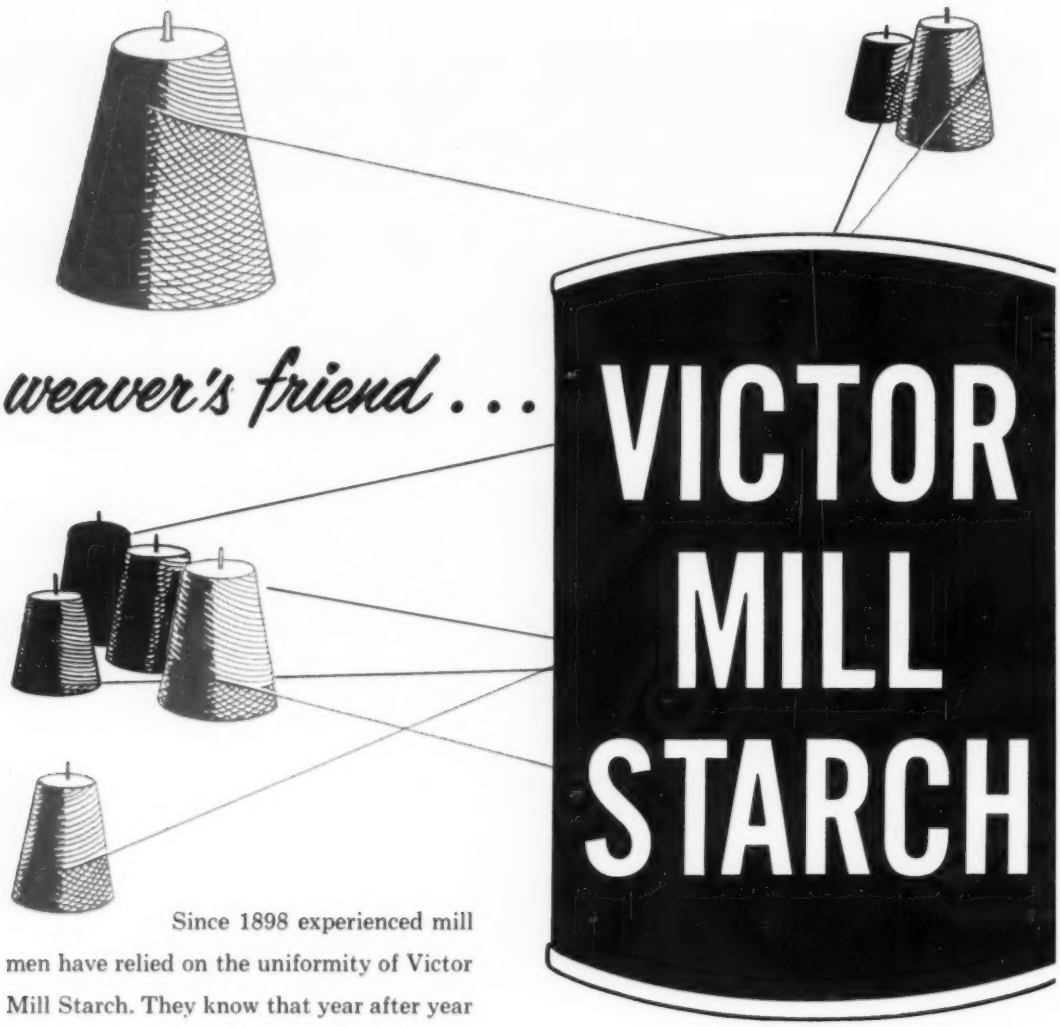
► All contributions must be postmarked not later than midnight, August 15, 1961.

► No limit to the number of entries an individual may submit in any one contest.

► All entries paid for upon acceptance — no waiting. Extra payment for photographs that are usable. Extra consideration is also given kinks accompanied by legible pencil sketches or drawings.

► Entries must not have been published previously and must not be submitted to any other publication.

► Send your contest entry to: The Editors, TEXTILE INDUSTRIES, 1760 Peachtree Rd., N. W., Atlanta 9, Ga.



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for a falling drop wire; Hole D holds the ¼" rod that doubles as a frame support and a rest or limit for the drop wires while the yarn is running through them.

The chosen drop wire may be positioned sideways on one of the blocks to approximate its position while the yarn is running and to help locate the places to drill for the various rods just mentioned. Project the drop wires slightly above the edge of the blocks to allow yarn clearance later as the blocks are mounted below the angle iron. Drill all blocks alike.

The dimensions and materials for this stop motion are suggestive. Since the unit is shop-built, the mechanic may employ perfect freedom in adapting whatever materials are best at his command. For instance, angle iron may be used in attaching the drop wire units to the frame (the pictures show flat iron) and the length given as four feet is an approximation. The logical approach is to make all the drop wire units and then fit them all to the frame, using whatever material lengths as become necessary.

Similarly, the material for the stand or shelf on which the transformers and the solenoids rest is arbitrarily given as 1" x 2" angle iron. This can be made of any convenient material, as can the brackets that secure it to the samsons.

The U bolts are really U brackets, and their sole purpose is to hold the pivot point for one end of the 12" piece of key steel that connects the solenoid to the ratchet of the mechanical knock-off.

Run a nut on one of the brass rods to act as a stop, then thread on the desired number of drop wires. Run the other nut onto the wire, leaving the drop wires loosely assembled. This forms the rough inside dimension of the drop wire frame.

Now assemble the frame, using the other two rods and leaving sufficient freedom in the drop wires. The finished frames are spaced along the winder and fastened to their support bars.

In mounting the solenoids, position each directly under the knock-off ratchet of each head. The transformers may be placed wherever convenient.

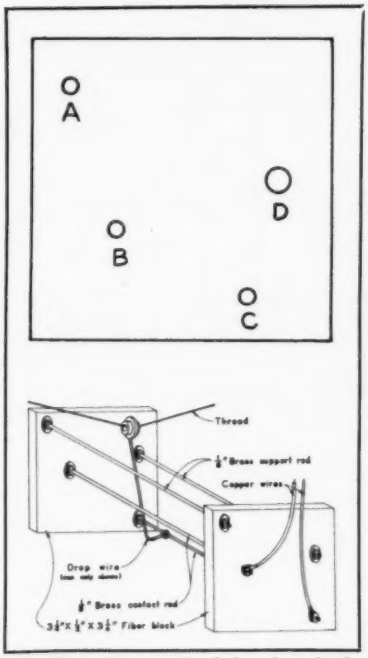
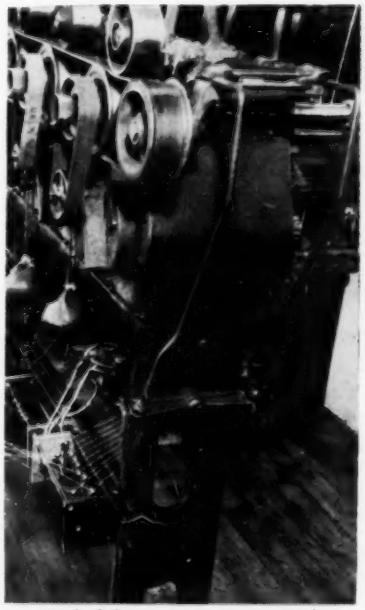


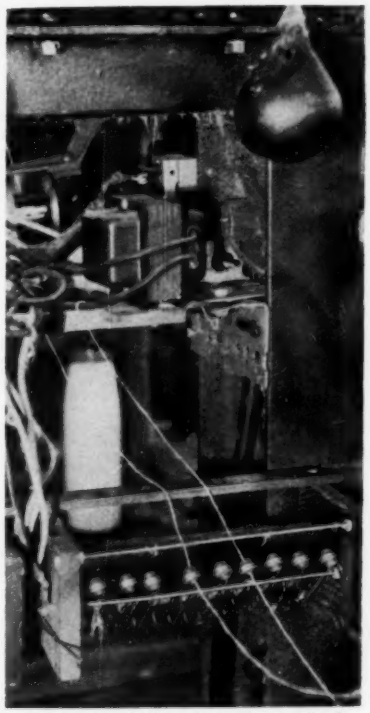
FIGURE 1. Position the holes through the plastic block to accommodate whatever drop wires are available. Holes A, B, and C are drilled to receive ⅛" threaded rods, C to accept the ¼" rod.

Drill a 3/16" hole through each end of the key steel ½" in from the ends. Drill another hole through the center of the steel to accept a 3/16" stove bolt that is passed through the tongue of the solenoid.

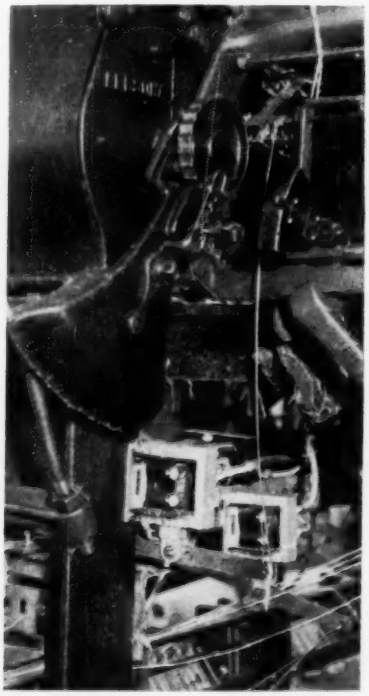
Now mount the U brackets to hold one end of the key steel, insert the bolts that hold the key steel in the solenoid tongue, and tighten the assembly. The outer end of the key should be under the



Finished drop wire section mounted.



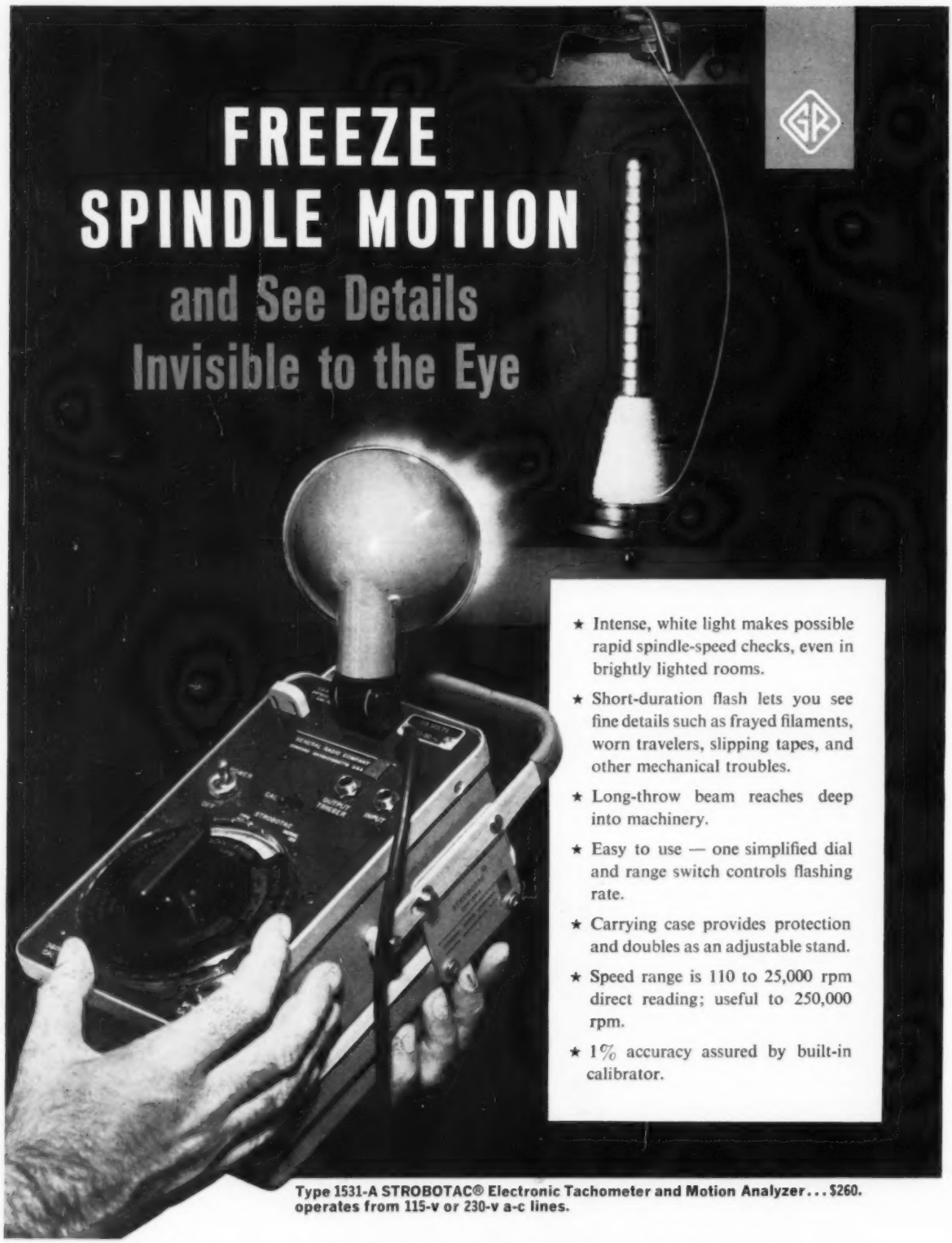
Transformer, shelf, and mounting method.



Solenoid and lever connecting it to the knock-off. Lever also pivots in U brackets secured to the transformer shelf.

FREEZE SPINDLE MOTION

and See Details Invisible to the Eye



- ★ Intense, white light makes possible rapid spindle-speed checks, even in brightly lighted rooms.
- ★ Short-duration flash lets you see fine details such as frayed filaments, worn travelers, slipping tapes, and other mechanical troubles.
- ★ Long-throw beam reaches deep into machinery.
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ratchet. Connect this end of the steel with the wire knock-off of the ratchet, using the 1/16″ welding rod and bending the hooks in the ends to allow freedom in the assembly. Adjust the linkage to knock off when the solenoid moves to its limit.

To get power to the stop motion, run two wires from two of the motor lead wires to the two lead wires of the transformer. Protect these wires with 25-amp fuses.

Run one lead from the transformer through the two connections of the solenoid and then to one of the rods as shown in the drawing. The other lead runs from the transformer directly to the other rod as shown. As a drop wire falls, it then closes the circuit, energizing the solenoid and tripping the stop motion.

CONTRIBUTOR No. 1317

Saved $15,000 yearly on stationery

THE EDITORS:

It is recognized that the operation of a mill entails a vast amount of printed stationery and other forms and supplies with which to record its daily operations and transactions and in the compilation of permanent records. These forms and supplies are costly and can easily become an expense entirely out of proportion to other overhead items.

It is also a fact that a purchasing agent can be overloaded with detail with respect to time consumed in handling his mill's purchasing requirements. This could hinder his concentration and effort toward planning his over-all buying on a competitive basis.

As a matter of fact, this actually happened at one mill until steps were taken to relieve him of some detail and assistance given him to reorganize his desk with the result that he is now obtaining the greatest possible savings in printing and supply purchases, working in close harmony with all department heads to accomplish this.

The first step in the working out of such a program called for the issuance of a bulletin or instruction sheet to all departments, reading as shown in the accompanying box.

Next, the stockroom was rearranged and all obsolete forms removed. Forms were properly stocked on shelving and the floor cleared of "surplus." An inventory was taken and maximum and minimum stock on each item was established.

The purchasing agent then catalogued each item in alphabetical order and cross-referenced with a numerical index, particularly in connection with numbered forms used in the accounting, IBM, and billing departments.

Copy work involving the use of many scattered machines as well as the photostat machine was proving very costly from both the standpoint of labor and material brought about by lack of management and organization. Through regulating personnel, he obtained a better grade of copy work and photostats and put a stop to waste in operation of machines and paper used to produce the finished product.

The elimination of waste and the "pin-pointing" of expensive printing forms to avoid overstocking, which ties up capital and which forms also become outdated and must be revised to meet current needs, has reduced "scrap" to a minimum.

Other important money-savers developed were (1) eliminating printing on two sides where a revised form was able to incorporate the essentials of the reverse side onto the front side of the form; (2) combining two printed forms into one such as a "Combination Bale Ticket and Inspection of Finished Goods Ticket"; (3) simplification and reduction in size and cost of payroll and other forms utilized by IBM and in preparation work on payrolls later processed by IBM machine accounting; (4) a careful screening of the forms and sizes and weight of ledger and carbon paper required; (5) protective storage of expensive or costly "too easy to carry off" stationery supplies by confining them on shelves in a "walk-in vault" along with permanent office records; (6) competitive bids on the larger quantity items; (7) securing best possible discounts

INSTRUCTIONS

1. Only one person in each department should be delegated to requisition office supplies, stationery, and printed forms.

2. Determine the usage of each form or supply item and order only *one month's supply* at a time.

   Reorders for replenishing the store's inventory are based on the minimum quantity in the store's stock; therefore, overstocking in departments necessitates purchasing forms and supplies in advance of requirements, causing a surplus of stock. This surplus is responsible for the scrapping of forms when revisions are necessary. (Return all excess stock to stores.)

3. Itemize the items required on the requisition, specifying the quantity in units (printed forms in units of sheets or sets—not pads), the number, and the title for forms, or a complete description for supplies.

   Do not permit the use of printed forms for scratch pads. Pads of blank or ruled paper may be requisitioned for this purpose.

4. Deliver the requisition to stores on or before the 5th day of each calendar month. The forms or supplies will be delivered to you the following day.

HELP ELIMINATE WASTE

Suggestions: Prepare a memorandum list of all forms and supplies used in your department. A monthly inventory of the items on hand will assist you to order systematically in proper quantities, periodically.

based on quantity purchases consistent with immediate and future requirements; (8) insisting on receiving quality merchandise and adherence to promised delivery schedules; (9) maintaining monthly budget figures and expending every effort to keep within the budget; (10) scrutinizing monthly comparisons of expenditures or purchase commitments with the budget control by top management.

The results achieved in the first five months of this program show purchasing of printed and other forms and supplies as having been confined within the budget. There has been a net savings of better than $1,200 per month as compared with the five months immediately preceding this period.

CONTRIBUTOR No. 1319

Pull needle butts with knife blade

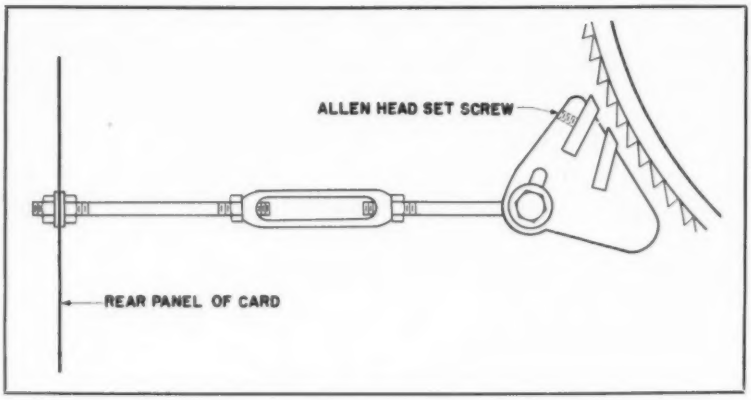
THE EDITORS:

The standard way of removing a broken needle and butt, when they break off just above the cam, is with a butt puller. But I find I can save a great amount of time by using a magnetized pocket knife blade to remove a broken needle when it falls between the cam and needle bar. I do not have to remove the cam all the way from the needle head — running the blade down between the cam and needle head does it.

There are several ways to magnetize the blade. I use a small magnet I salvaged from an old sign flasher. I merely lay the magnet on a board or piece of card board and position the blade tip on top of the magnet for about 10 minutes. Each must determine the amount of time required for his magnet to load the blade just enough to lift the needle with ease.

Usually there is a magnet of some kind to be picked up—an old Model T Ford magnet is ideal. Too, magnets can be acquired from novelty houses or hardware stores, and electromagnets are easily made to do that job.

CONTRIBUTOR No. 1294



Mote-knife support stops licker-in damage

THE EDITORS:

This kink describes a method of setting mote knives at their centers to prevent chokes from pulling the knives into the licker-in and to give a third bracket to assist in making more accurate settings.

We had the shop remove the bosses through which the adjusting screw holes ran. This left that side of the bracket smooth. We then had the bracket tapped and threaded for a ¼″ Allen set screw so that the screw would secure the bracket to the back knife.

We drilled a 7/16″ hole through the back panel under the feed plate, secured ⅜″ x 5″ eye bolt, a 3″ turnbuckle, and a 6″ length of ⅜″ steel rod. We assembled the parts as shown in the illustration.

The short steel rod anchors the assembly to the back panel, and the turnbuckle allows us to move the bracket in or out. The fixer makes his setting then secures it by jamming the lock nuts in place on the turnbuckle.

CONTRIBUTOR No. 1316

Change in slubber creeling upped production

THE EDITORS:

Recently we changed our method of creeling our 9″ x 4½″, 132-spindle slubbers, and the new method is paying off. We were creeling them a half-frame at a time.

Some shifts the tender would creel three half-frames (ends) of 66 cans; the next tender would creel two ends; and the next tender only one. To give each tender the same amount of creeling, we switched to creeling 12 cans on each doff. One can of sliver will run for 11 doffs, so the arithmetic behind the division is plain: 132/11 equals 12. In essence, the new system requires the operative to set in, or creel, as

many pounds as he doffs, and this evens out the creeling duties among the operatives.

Our 10 slubbers are arranged in pairs across the card room, with common can alleys between the pairs, and to keep congestion out of the alleys, we started by creeling the head end of No. 1 slubber and the foot end of No. 2.

Aside from keeping our work loads distributed more equitably, we gain approximately two hours in production each shift, about 350 pounds of roving each 24 hours. We are using 12″ x 36″ cans in the creels, but the system can be adapted by any overseer to meet his can sizes.

CONTRIBUTOR No. 1306

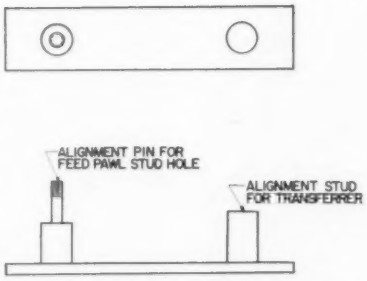
Jig aligns transferrers for welding

THE EDITORS:

It is not good practice to use welded transferrers, but it is sometimes necessary to do so. If the parts of the transferrer are not aligned perfectly while being welded it will only break again and could cause extensive damage to the loom, shuttle or warp.

Because of its shape, the parts of the transferrer are hard to hold straight. A jig can be made that will hold the broken parts in perfect alignment.

Since most breaks occur between the transferrer stud hole and the feed pawl stud hole, two pins that fit these holes closely



will hold the parts securely. The smaller pin can be threaded and a nut screwed down tightly to hold the part more securely while it is being welded.

CONTRIBUTOR No. 1313

Lets empty quills run around filling winder

THE EDITORS:

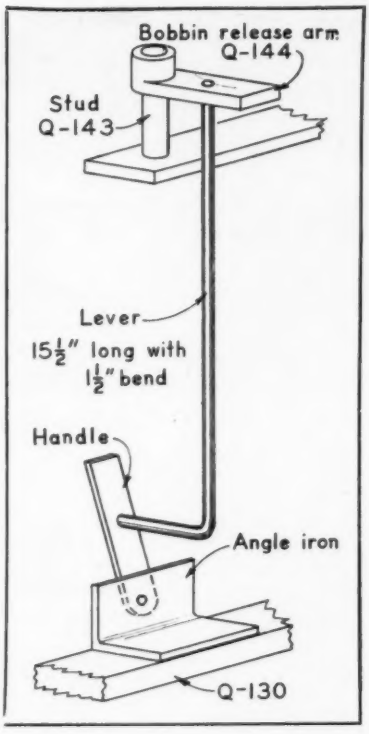
Sometimes it becomes necessary to run empty units around the track on an Abbott automatic quiller.

In such a case, one way to keep the units from catching empty quills and still continue to run around the track is to install a long lever approximately 15½ inches long, one end bent about an inch or an inch and one-half.

To begin with, Q143 bobbin release arm stud has to be replaced with a 3-inch stud. The shop can make a 3-inch stud, or a 3-inch bolt with a sleeve can be used. Next bolt the bent end of the rod to Q144 bobbin release arm.

On the other end bolt a small piece of angle iron on the inside of the plate Q130. Next bolt a small handle on the angle iron, and to the handle bolt the rod.

"Wonder if it'll win TI's Kink Contest?" (Details on page 159.—The Editors)



Now if you want the units to run around without catching the empty quills, simply push handle towards Q144 bobbin release arm. The lever will push the bobbin release arm back on the bobbin release stud, thus clearing the way for the units to pass through bobbin changes without stopping.

This method is faster and safer than putting an empty quill in the feed track between the hold back finger.

CONTRIBUTOR No. 1318

How do you dress cotton calender rolls?

THE EDITORS:

Can you put us in touch with any mill men who would be willing to guide us in dressing or tapering cotton or rubber rolls of calender and padding mangles? We are more concerned with methods of dressing cotton rolls while they are mounted in the calender.

CONTRIBUTOR No. 1310
(India)

NEW PRODUCT PARADE

Please note: Claims made in all of these announcements of new developments are of necessity based upon information furnished by the respective suppliers.—The Editors.

Two-delivery drawing frame runs at 800 fpm

Development of a two-delivery drawing frame capable of processing carded stock at speeds up to 800 fpm has been announced. Known as the Whitin Even-Draft Model M7, the drawing frame delivers sliver into 20" x 42" cans and is equipped with a power creel for efficient operation with the largest card sliver cans available.

Drafting element is the four-over-five roll type used on other Even-Draft models. The overarm suspension weighting system is effective and efficient, with correct weighting made possible by precalibrated springs. Weighting may be quickly applied or released on each delivery. The latest type Pneumafil vacuum cleaning system is utilized.

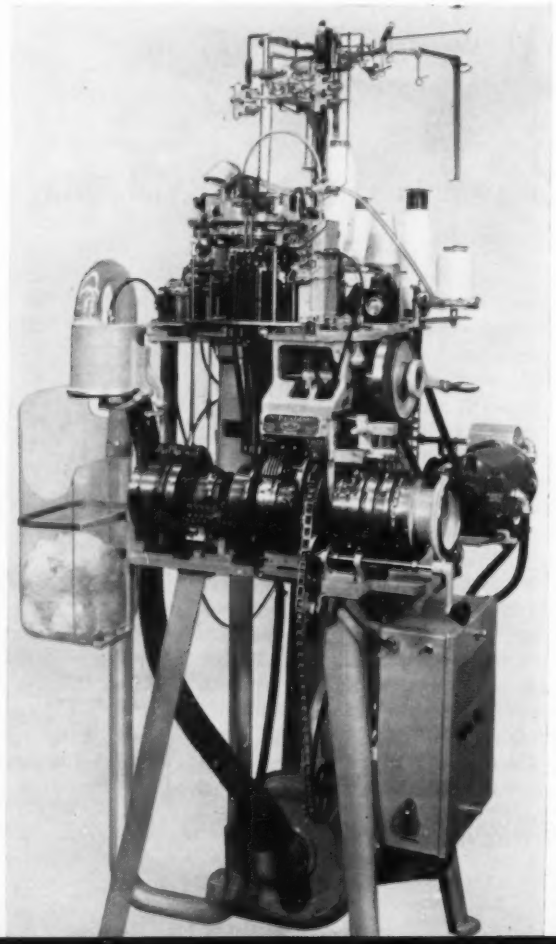
Designed to run with 10 ends up, the frame is powered by a 5 hp motor using Vari-Pitch sheaves. A deceleration device insures soft but quick stops. Specially designed tube gears, supported around their circumference by heavy-duty ball bearings, are smoothly driven by a V-belt drive.

Whitin Machine Works, Whitinsville, Mass.

Do you want more data? Write ◂ or use card on page 187; list F-101

Twin-feed lace machine for ladies' seamless hose

Maximum patterning flexibility consistent with high operating speed is provided by the new "Reading" Mark III twin-feed ladies' seamless hosiery knitting machine. It can be used for plain knitting, micro-mesh, and floated



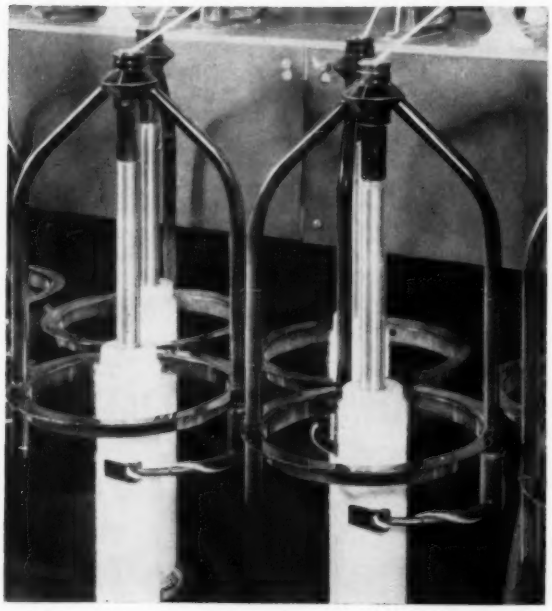
lace at either or both feeds, and it offers infinite float and tuck combinations, such as run-stop bands. Better selvages are produced, as splicing is done by needle selection. Estimated production of the machine, which is capable of making all known heel and toe constructions, is 2 to 2½ dozen pairs per 8-hour shift, with a machine speed of 210 rpm in run-down and reciprocating and 100 rpm at changes.

Some construction features: high cylinder with 25-step cylinder jacks; automatic end trimmer; two trick drums; automatic vacuum take-down; large ratio quality control; automatic mechanical oiler.

Textile Machine Works, Reading, Pa.

Do you want more data? Write ◂ or use card on page 187; list F-102

Flyer boosts roving frame output, quality



Increased flyer speed (up to 1200 rpm), more roving on the bobbin (from 5 to 20 per cent), and consistently more even roving are some of the benefits to be derived from the new Roberts roving frame flyer which can be applied to existing machines and is also standard equipment on Roberts roving frames. It makes possible the conversion of a 12" x 6" roving frame to a 12" x 7" or 14" x 7" package size with 80 to 90 ounces of cotton roving.

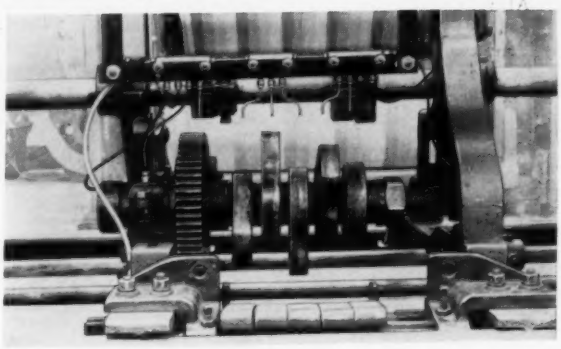
A unique rim joins the flyer legs near the bottom, thus preventing leg deflection due to centrifugal force. A completely enclosed tubular leg protects the roving from air turbulence that can cause fluffing, is virtually self-cleaning, and requires less time for breaking-in. Of tempered steel with a special, easy-to-clean finish, the flyer also features a counter-balanced presser.

Threading of the roving strand can be performed quickly in either direction from bobbin to delivery roll with a flexible threading hook supplied. Doffing is performed simply by one of the methods used for conventional type flyers.

Roberts Co., Sanford, N. C.

Do you want more data? Write ◂ or use card on page 187; list F-103

Simplify lubrication of underwarp loom parts



Now available for quick and easy installation on existing looms by mill personnel is a centralized lubrication system for the harness cams and gears which are located under the warp. Use of it eliminates the necessity to stop the loom for lubrication of these parts and a primary source of oil stains on fabrics.

Components of the system are available as a kit which includes a Bijur "One-Shot" lubricator with a two-pint reservoir, tubing, and Meter Units and adapters for feeding controlled quantities of oil to the gears and cams. All elements of the distribution system are mounted on a steel bar which is equipped with mounting brackets. Lubrication requires only the simple operation of the lubricator, mounted adjacent to the loom motor, at periodic intervals.

Bijur Lubricating Corp., Rochelle Park, N. J.

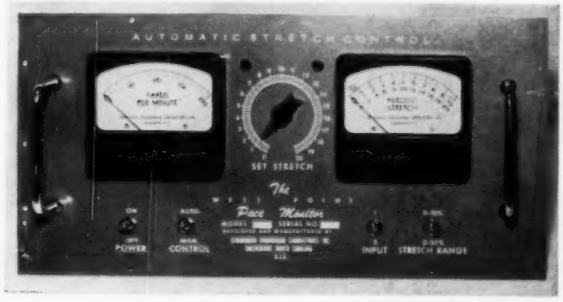
Do you want more data? Write ◂ or use card on page 187; list F-104

Automatic yarn stretch control for slashers

Automatic indication and control of stretch at the slasher is provided by the West Point Pace Monitor, an electronic apparatus which is tied into a slasher drive in such a way as to automatically regulate the relationship between the input or size box warp speed and the output or delivery speed. Since the unit employs friction-surface rollers working in direct contact with the warp yarn for rate measurement, the possibility of slippage is eliminated and no roll size or gear ratio accuracy problems exist.

Developed by Strandberg Engineering Laboratories in cooperation with West Point Foundry & Machine Co., the Pace Monitor is available either as an indicating instrument or as an indicating and controlling unit. With the latter, the slasher operator simply sets a pointer for the amount (per cent) of stretch desired and this is auto-

Panel of the combination indicating and controlling apparatus.



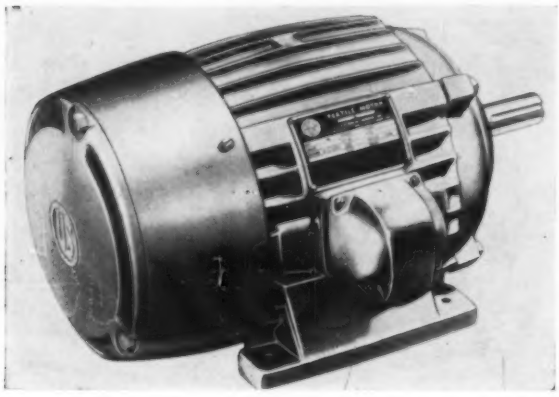
matically maintained until the setting is changed.

Also available is a very simple, easy-to-install warp speed indicator which is a byproduct of the stretch instrument development.

Strandberg Engineering Laboratories, Inc., 225 Summit Ave., Greensboro, N. C.

Do you want more data? Write ◂ or use card on page 187; list F-105

Lint won't collect on or in this motor



The design of a new, fan-cooled, totally-enclosed electric motor prevents the entrance of lint and other airborne particles and minimizes the build-up of lint on external surfaces. Designated the Type JG Textile Motor, it is available in ratings from 1 to 50 hp, speeds 720 to 1800 rpm, 3- or 2-phase, 60 cycles, with operating voltages of 220/440 or 550 volts.

Other construction features: ribbed surface dissipates heat faster; intake ports are contoured to minimize air restrictions and permit low intake velocity, while preventing turbulence; grease passages are designed to transmit new grease through ball race to opposite side, thus forcing old grease out through the drain.

U. S. Electrical Motors, Inc., P. O. Box 2058 Terminal Annex, Los Angeles 54, Calif.

Do you want more data? Write ◂ or use card on page 187; list F-106

Long-term sale-leaseback plan for textile mills

A plan by which textile manufacturers can sell their existing plant and equipment and immediately lease it back for terms of from three to 12 years has been announced. Known as the Nationwide Sale-Leaseback Plan, it is designed specifically for firms which have an over-large investment in fixed assets and whose growth, as a result, is being hampered by tight working capital.

Every type of production and office equipment is included in the leaseback plan, features of which are: (1) Equipment will be purchased for cash at book value and for selected firms at even higher prices; (2) Equipment will be immediately leased back to the companies for terms from three to 12 years, depending on the amount and type of equipment; (3) No security deposit

DRONSFIELDS' PATENT
ATLAS BRAND
EMERY FILLET

U.S.A. Patent
2426441

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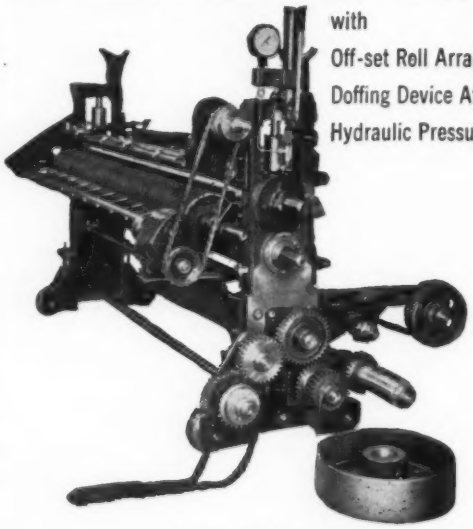

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For further information use Handy Return Card, Page 187

is required; (4) Level quarterly payments, unless other schedules are requested; (5) Custom-built equipment is included.

Minimum amount that will be considered under the plan is $25,000. There is no maximum.

Nationwide Leasing Co., 11 South LaSalle St., Chicago 3, Ill.

Do you want more data? Write or use card on page 187; list F-107

Handy, direct-reading humidity recorder

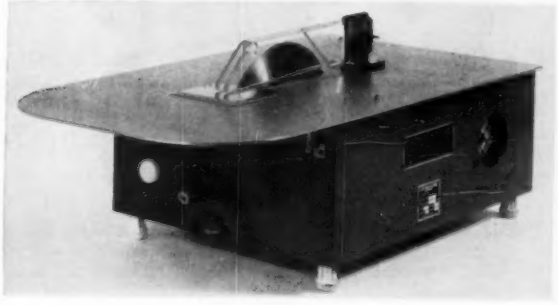
A new relative humidity recorder is available in four models which provide for such features as hand portability or wall mounting and recording the dry-bulb temperature on the same chart with the relative humidity. The portable model can be taken from room to room to give quick, reliable indications of atmospheric conditions.

Identified as the 100J Series, the instruments are equipped with specially aged and treated nylon actuating elements mounted in such a manner that exceptional accuracy is provided and rezeroing is seldom necessary. Other features of these rugged, easily serviced instruments are: built-in temperature compensation, excellent repeatability, weighs only 25 lb, provides 12" chart record over 24-hr period.

Taylor Instrument Companies, 95 Ames St., Rochester 1, N. Y.

Do you want more data? Write or use card on page 187; list F-108

Improved table-slitter for knitted fabrics



Eastman Model TS Table-Slitters now being manufactured include the following improvements over those made earlier: enlarged rounded corners for easier feeding of tubular goods; blower-type fan to deliver a greater volume of cool air to the motor and knife, knife centered in the table top, starter button up front to permit sinking the machine into a table for efficient flow of work.

Eastman Machine Co., Buffalo 3, N. Y.

Do you want more data? Write or use card on page 187; list F-109

breed of cat

Aquazine® 100

Cationic softeners have always had many advantages to processors . . . but let's face it, "cats" have had some "buts", too. That's why Aquazine 100 has so many finishers taking a new look at Cationics. Aquazine 100 exhausts evenly, is non-yellowing, produces superior softness with less material and at a lower cost.

Your MORETEX representative will be happy to give you full details and to arrange for a test in your plant.

MORETEX

CHEMICAL PRODUCTS, INC.

314 W. Henry Street Spartanburg, S. C.

Manufacturing Chemists For a Half Century of Textile Progress

Automatic screen printer is accurate, fast

The latest model of the Comerio Ercole automatic screen printing machine operates with an accuracy of 0.1 mm and features an endless conveyor belt made of a phosphorous bronze construction, which is coated with a solvent and color-resistant elastic resin.

On a 16" repeat and a fabric width of 36", and one stroke of the squeegee, the machine has an output of approximately 215 yds per hour; while on a 36" repeat and a fabric width of 36", and one stroke of the squeegee, the machine has an output of 350 yd per hour.

The machine operates conventionally in four movements: (1) lifting of screens; (2) movement of belt-conveyor in one fast movement followed by a slow movement which allows greater accuracy of repeat; (3) lowering of screens; and (4) movement of squeegees.

A double squeegee system is employed. The number of passages across the fabric can vary from one to four, to take place independently of movements in other screen stations. The squeegees are of a light aluminum alloy and the blade is of neoprene.

The machine is driven electro-mechanically, the movement being transmitted through very quick acting electromagnetic couplings. It can be built in standard sizes to accommodate varying fabric widths and colors numbering from 8 to 12.

Jorge Conte, 139 N. Alexandria Ave., Los Angeles, Calif.

Do you want more data? Write ◆ or use card on page 187; list F-110

Hooks for belts running under adverse conditions

For fastening belts which operate under damp or wet conditions, where acids are encountered, or where non-sparking or non-magnetic fasteners are desired, special purpose belt hooks are available. Clipper Stainless Belt Hooks (Grade 430 stainless steel) are recommended for belts which run under wet or damp and acid or acid vapor conditions. Rustproof (Monel) Belt Hooks are available and preferable to stainless when acetic, phosphoric, or sulfuric acids are encountered. Phosphor Bronze Belt Hooks are non-sparking and non-magnetic.

Clipper Belt Lacer Co., 947 Front Ave., N. W., Grand Rapids 2, Mich.

Do you want more data? Write ◆ or use card on page 187; list F-111

Textile Production in Venezuela

Cotton plant designed by Lockwood Greene and built by Ernesto A. Lilue for C. A. Telares de Palo Grande.

DESIGNED and ENGINEERED by LOCKWOOD GREENE

This 425,000-square-foot plant produces dyed and finished woven fabrics from carded and combed yarns using Venezuelan cotton and blends of synthetic fibers. Lockwood Greene designed the building and steam plant, planned the air conditioning and mechanical ventilating system, and laid out all the machinery—using European equipment and the latest U. S. practice.
Send for a brochure with other examples of our work in the textile field.

LOCKWOOD GREENE ENGINEERS, INC.

316 Stuart St., Boston 16, Mass.
41 East 42nd St., New York 17, N. Y.
Montgomery Bldg., Spartanburg, S. C.

CORROSION-RESISTANT

From Flange to Flange — Inside and Out!

Ductwork by du Verre

Over a wide range of corrosive and erosive conditions, du Verre Resin Bonded Fiberglass has proved its superiority over coatings, linings and other traditional "resistant" materials.

Completely homogeneous, du Verre fabricated ducts, fittings, hoods and tanks provide uniform protection from flange to flange, inside and out. One-quarter the weight of steel, du Verre fabrications also save you money on freight, handling and erection.

Whatever your process needs, equipment can be du Verre fabricated to your specifications. Write today. Ask for Bulletin No. 101 and see how du Verre can eliminate the high cost of corrosion and product contamination.

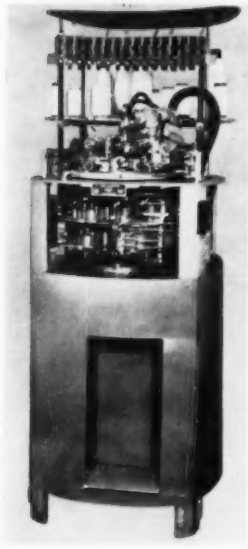
du Verre INC.

First in quality for complete corrosion control with reinforced plastics

BOX 37-H • ARCADE, NEW YORK

For further information use Handy Return Card, Page 187

Makes a ladies' seamless stocking in 2-3 minutes



A new four-feed, 400-needle ladies' seamless hosiery knitting machine, designated the "Reading" Mark IV, automatically produces run-down stockings (without reciprocation) at a rate of 7 to 9 dozen pairs per 8-hour shift, depending upon style and size. An extremely flexible machine capable of producing floated lace and micro-mesh in addition to plain work and splicing, the machine offers multi-feed tucking and floating, extra yarn changing capacity for striping and other specialties, and splicing in an infinite variety of heel and toe shapes without special attachment.

Construction features: Automatic end trimmer; automatic vacuum take-down; controlled loose course; stop motion and indicator light; dial driven from needle cylinder; individual gear-motor drive and controller.

Textile Machine Works, Reading, Pa.

Do you want more data? Write ◀ or use card on page 187; list F-112

Colored bobbin barrels identify yarns in process

Laminated plastic bobbin barrels are available with various non-bleeding colors to permit quick identification of yarn. Barrels are furnished in any size required to the individual specifications of textile mills. Colors available are: natural, red, green, yellow, blue, and black.

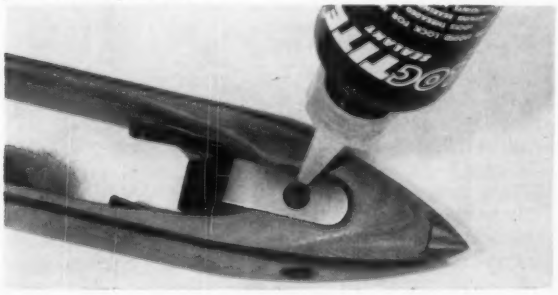
Taylor Fibre Co., Norristown, Pa.

Do you want more data? Write ◀ or use card on page 187; list F-113

Liquid locks screws, stakes bearings

A liquid retaining compound is being used in the textile industry for locking screws, staking bearings, and sealing joints. Called Loctite, it is a liquid polymer that hardens into a tough, load-bearing solid when confined

Here Loctite is used to lock a shuttle spring binder screw in place. It may also be used to hold bearings, oil seals, and bushings in place without press fits.



Others talk about *maximum* lint collection . . . this one does it.

Koppers *new* MODEL F AEROTURN dust filter is not a modification of a filter designed for some other purpose. Nor is it an all-purpose unit. MODEL F AEROTURN has been designed from the ground up for the express purpose of collecting fibrous and linty materials with higher efficiency, greater economy.

The new Model F reduces clean-up expenses . . . improves the quality of your finished product . . . permits air recirculation with no loss of heating or cooling dollars. This unusual efficiency is a result of Koppers exclusive Reverse-Jet action, which assures top performance—even under the severest load conditions.

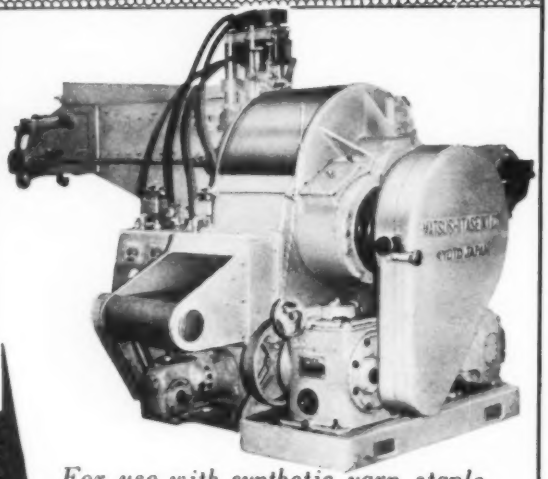
The compact, simplified design of Model F saves space and installation expense. Sturdy construction assures trouble-free operation. Install inside or out, for any capacity required.

GET THE COMPLETE STORY OF MODEL F AEROTURN'S advantages for air filtering in textile mills. Write: KOPPERS COMPANY, INC., Dust Filter Dept., 4706 Scott Street, Baltimore 3, Maryland.

KOPPERS®

AEROTURN®
DUST FILTERS
Engineered Products Sold with Service

NEVER BEFORE
MATSUSHITA'S
DOUBLE
TURNING
CUTTING
MACHINE



PROPERTIES

For use with synthetic yarn staple, rags, natural fibers & yarn in making short fibers for:
1. Paper manufacturing
2. Non-woven fabrics
3. Spinning yarn

Cutting range; 0.1mm—40mm
Special feed and fiber separating system
●*Full details on request*

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World Distributor
OKURA TRADING CO., LTD.
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U.S.A. Office :
OKURA & Co., New York, Inc.
30 Church St, New York. 7, N. Y., U. S. A.
Tel. BArclay 7-6640

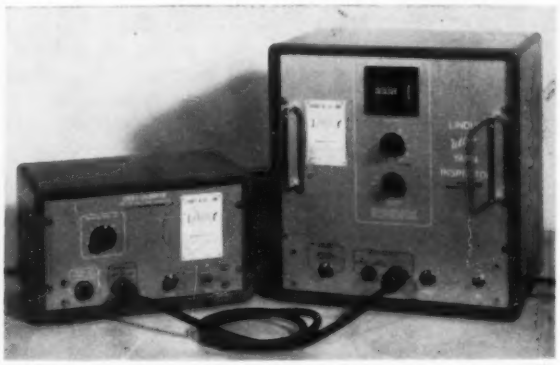
between close-fitting metal parts. The product is not an adhesive; its strength is entirely in shear force resistance. Five different grades are manufactured, depending upon the shear loads to be expected.

American Sealants Co., Hartford 11, Conn.

Do you want more data? Write ◂ or use card on page 187; list F-114

Automatically checks Lindly Yarn Inspectors

The Lindly Auto-Calibrator Model 1080 is capable of both calibrating and automatically checking the sensitivity of Lindly Yarn Inspectors. When used for spot calibration, the portable electronic device is ordinarily moved from one Yarn Inspector to another for periodic



Lindly Auto-Calibrator (left) connected to a Series 1000 Lindly Ultra Yarn Inspector control unit.

checks. When the continuous monitoring of yarn sensitivity is desired, the apparatus is permanently connected to the Yarn Inspector. A flashing light on the panel of the control unit indicates whether or not sensitivity has been decreased.

Electronic Sales Div., Foster Machine Co., Westfield, Mass.

Do you want more data? Write ◂ or use card on page 187; list F-115

Compressed hickory, laminated wood pickersticks

Two pickersticks recently were placed on the market: (1) the "Bett-A-Stix," a compressed hickory pickerstick, and (2) the "Tuff-Top Stick" which is made of laminated wood, impregnated with phenolic resin and compressed to a specific gravity of 1.30 at the top where most wear takes place and 0.90 at the bottom. They complete a line of five pickersticks which enable mills to obtain pickersticks for every application from one source.

Louis P. Batson Co., 3978 Park Place Branch, Greenville, S. C.

Do you want more data? Write ◂ or use card on page 187; list F-116

Self-cleaning automatic hydraulic spray nozzle

An unusual feature of the 8651-¼JAUH Automatic Hydraulic Spray Nozzle is a clean-out needle that automatically clears the orifice with each on-and-off cycle of the nozzle. This is done by means of a clean-out needle extension of the orifice shut-off valve. Each time the

valve closes the clean-out needle moves through the orifice opening to clear out any solid residue that might otherwise adhere. Compressed air is used to actuate the valve.

Spraying Systems Co., 3272 Randolph Street, Bellwood, Illinois.

Do you want more data? Write ◂ or use card on page 187; list F-117

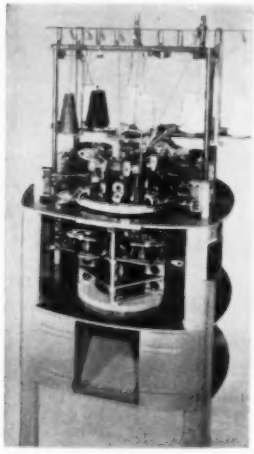
Electronic drive offers wide speed range

An adjustable speed drive with a speed range from 2:1 to 100:1 features reduced maintenance and close speed regulation. Designated the Square D Class 8833 Type BG Drive, it is available in ratings from ¾ to 4 hp, and operates from a single phase a-c supply. A pair of grid-controlled thyatrons and diode tubes provide full-wave rectified voltage to the drive motor armature. Maximum and minimum speed limits are easily adjusted within the controller to specific applications.

Square D Co., 4041 N. Richards St., Milwaukee 12, Wis.

Do you want more data? Write ◂ or use card on page 187; list F-118

Knits 15 dozen pairs of socks in 8 hours



For fast and economical knitting of plain dress or work socks, crew socks, and striping, is the fully automatic "Reading" CK-B circular knitting machine which has a productive capacity of 15 to 15½ dozen pairs per 8-hour shift, depending upon style and size. Complete accessibility of the machine components reduces downtime and simplifies maintenance of this four-feed unit.

Independently controlled feeds (single feed in heel and toe), individually controlled clamp and cutter for each feed, controlled loose course, tuck stitch for rubber top, heel and toe selection controlled from pattern drums, and air device for eliminating knit-in ends are some of the construction features. Most parts are interchangeable with the standard CK-A inlaid pattern machine.

Textile Machine Works, Reading, Pa.

Do you want more data? Write ◂ or use card on page 187; list F-119

Doctor blade does better job, lasts longer

Better performance, longer life, less maintenance, cleaner rolls, and higher product quality at lower cost are advantages to be derived from a new doctor blade which is now commercially available in all sizes and types in the following materials: tempered carbon steel, cold rolled steel, stainless steel, K-Monel steel, phosphor bronze, laminated plastic, and special alloys.

John W. Bolton & Sons, Inc., Machine Knife Div., Lawrence, Mass.

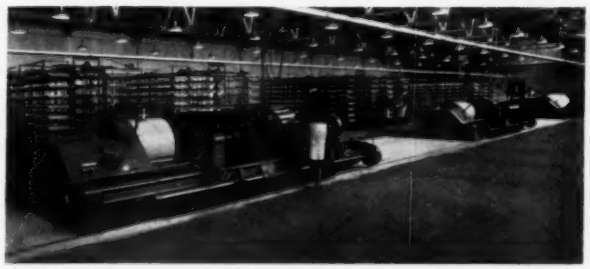
Do you want more data? Write ◂ or use card on page 187; list F-120

WHITINSVILLE, MASS.
H.J. THEILER CORPORATION
SPARTANBURG, S. C.

BENNINGER WARPER

The most modern warper built today — greatest flexibility — high speeds — Automatic Computor — Transportable Drum — Slash Directly From Drum — or Beam onto Loom Beam — 1:1 End Leases and Split Leases up to 10-Fold — Results: No Yarn waste, better quality warps, no slasher standstill.

QUICK RETURN OF THE INVESTMENT!



BE SURE YOU SPECIFY— ON YOUR NEW FRAMES PNEUMAFIL®

Only PNEUMAFIL gives you exclusive "air flow" suction to "swallow" more air, capture more lint, enable faster front roll speeds. Special ring diffusor fan gives widest range of operation at peak efficiency. Choice of three discharge arrangements.

plus

DELTAFLUTE — A powerful new "lap fighter." Unique shape allows closer flute positioning under front roll. Shorter, wider orifice concentrates air stream at point of maximum lint generation for remarkably good cleaning.

plus

DUFLEX SUSPENSION — Instant and effortless two-position suspension of flutes permits operator to work around rolls with both hands. Eliminates danger of scratched orifices which cause lint accumulation.

PNEUMAFIL CORPORATION • CHARLOTTE 8, N. C.

The Arbach Model 150 steaming and shrinking machine.

Automatic washer-extractor for 50-lb loads

In only 29 minutes the new "Hydrex" automatic washer-extractor thoroughly washes, rinses, and extracts 50-lb (dry weight) loads of knit goods. Operation is entirely automatic except for addition of washing supplies on signal.

American Laundry Machinery Industries, Ross & Section Aves., Cincinnati 12, Ohio.

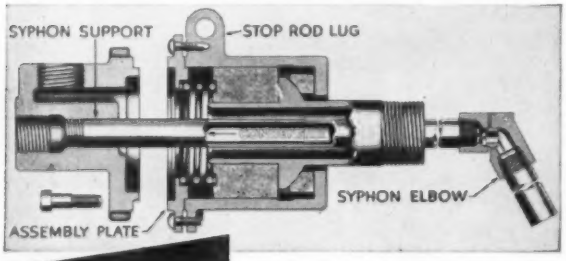
Do you want more data? Write supplier or use postage-free card on page 187; list F-121

Versatility is feature of this shrinking machine

While the Arbach Model 150 steaming and shrinking machine is especially suitable for shrinking all kinds of knitted fabrics (cotton, wool, synthetic), it may also be used for processing woven fabrics. By means of a conveyor felt with infinitely variable speed, the fabric is fed without tension to a steaming oven and air drying oven, being conveyed through the ovens by a fine wire conveyor belt. Upon emerging from the dryer, fabric is folded by a variable speed folding roller onto a

TRY THIS on your Dry Cans and 30″ Slasher Cylinders

We'll gladly furnish a pair of these units for 90-day obligation-free trial in your mill. The Type SB2P is self-supporting, completely packless, needs no lubrication or adjustment. The Johnson Syphon Elbow permits the use of two straight pipes instead of an unwieldy curved syphon pipe, is hinged to pass right through the joint.



Johnson ROTARY PRESSURE **Joints** *First* in the Textile Industry

Write for Catalog S-3002

Shows self-supporting Johnson Joints for all needs . . . on print cans, calenders, compressive shrinkage ranges, big 5′ and 7′ cotton slashers, dry cans, etc.

THE JOHNSON CORPORATION
815 Wood St., Three Rivers, Mich.

MAKE SURE YOUR KEY EXECUTIVES AND EMPLOYEES RECEIVE Textile Industries *EACH MONTH.*

For further information use Handy Return Card, Page 187

folding carriage. Speed of fabric through machine, 79" or 158" per min as required; steam pressure, 60 psi; steam consumption, 66 lb per hr.

August Schoenenberg, Inc., 1267 W. Laurelton Parkway, West Englewood, N. J.

Do you want more data? Write supplier or use postage-free card on page 187; list F-122

Naps knit goods efficiently

A new model of the Ainslie knit goods brushing machine is equipped with a hand-wheel-operated variable speed drive for accurate control of the brushing operation. Among other construction features of the machine which will raise a long, fleecy nap on cloth of natural or man-made fibers and individual articles (hosiery, gloves, etc.) are the following: self-contained dust exhauster with large lint bag and convenient ports for cleaning ducts; ball-bearings on motor, blower, and rolls; automatic reversing of the 60"-wide brush for sharpening.

Ainslie Knitting Machine Co., 740-750 Grand St., Brooklyn 11, N. Y.

Do you want more data? Write supplier or use postage-free card on page 187; list F-123

Knitter makes fancy 63"-wide sweater fabrics at 19 cpm

High production of many different fabrics for collars, trimmings, and sweater bodies may be obtained on two Mestre fully automatic flat power knitting machines.

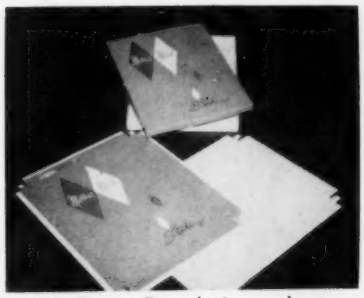
Designated as Model H-L-J and Model H-L, both machines have "fall away" flappers which enable them to increase speed to over 19 courses per minute when making all changes in color and stitches, and, of course, to even greater speeds for plain cloth.

Joseph Kopelowitz, Inc., 600 Broadway, Brooklyn 6, N. Y.

Do you want more data? Write supplier or use postage-free card on page 187; list F-124

Cuts ladies' hosiery packaging cost

The new One Quarter Dozen Hosiery Package for ladies' hosiery offers a reduction in cost as a result of the high speed by which it can be manufactured. Shipping weight is considerably less than that of the



One Quarter Dozen hosiery package.

standard "set-up" box. The "wraps" required for set-up style boxes are not needed when this new package is used.

Old Dominion Box Co., Inc., Lynchburg, Va.

Do you want more data? Write supplier or use postage-free card on page 187; list F-125

Bulky-knit patterns "unlimited"

Pattern possibilities for bulky garment sections and trims are practically unlimited on the new Queens 2½ and 3 cut Model "B" flat "V" type knitting machine. Available in 66", 68" or 74" bed width, the ma-

JENKINS PRODUCTS —

ENGINEERED FOR PROGRESSIVE MILLS

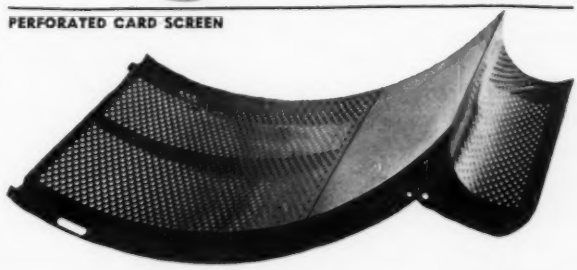
Today, more and more, Textile leaders are demanding JENKINS ENGINEERED PRODUCTS, machined on exclusive Jenkins equipment to give smoother performance and more uniform yarn quality.

For instance, JENKINS Spinning Cylinders and Card Screens are engineered by men who for the past 49 years have pioneered in *engineered metal products* . . . for mills that have moved constantly forward with higher quality at lower cost.

Ask to see the newest brochure on our complete line of Services in the Metal Fabricating Field.

RIBBED TYPE CARD SCREEN

PERFORATED CARD SCREEN

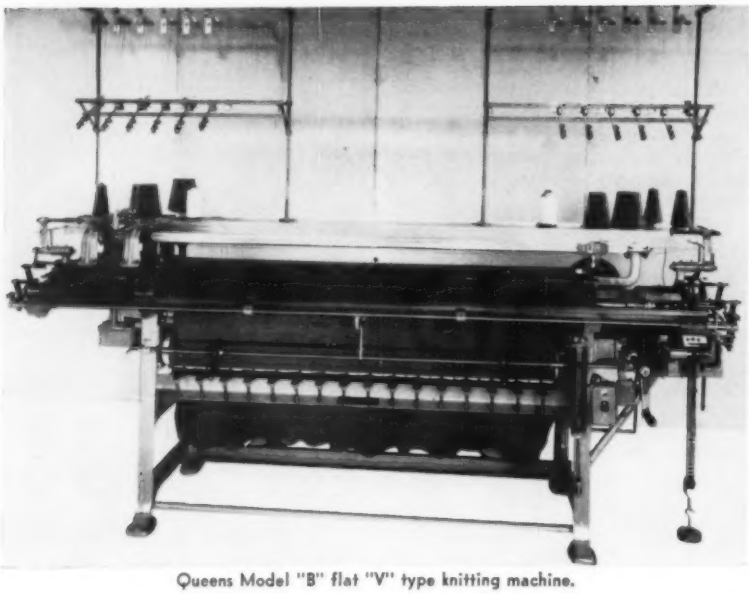


SINCE 1912 JENKINS METAL SHOPS INCORPORATED ENGINEERED PRODUCTS

JENKINS METAL SHOPS, Inc.

P. O. BOX 1160

GASTONIA, NORTH CAROLINA



Queens Model "B" flat "V" type knitting machine.

chine features high and low butt needle arrangement on both beds and high and low butt push jacks. Any and all changes can be made while carriage is at either end of the machine.

Queens Machine Corp., 280 Starr St., Brooklyn 37, N. Y.

Do you want more data? Write supplier or use postage-free card on page 187; list F-126

Apronless, tapeless spinner makes uniform worsted yarns

Very even worsted type yarns are produced economically on the Boyd high-draft, large-package, ring spinning frame, significant features of which are a four-roll, apronless draft element and endless belt drive for spindles. Drafts up to 20 may be obtained on this machine which is manufactured by J. & T. Boyd, Ltd. of Glasgow, Scotland.

Each side of the 38"-wide machine is individually driven; hence, the two sides can be run at different speeds, twists, and drafts, and can be doffed at different times as required.

Ralph Gossett & Co., 314 E. Coffee St., Greenville, S. C.

Do you want more data? Write supplier or use postage-free card on page 187; list F-127

Efficient way to make warps for short runs

In mills where warps for long runs are not required, the SACFEM (S. A. Costruzioni Ferroviarie e Mec-

JOHN P. NISSEN, JR., COMPANY
P. O. BOX 888 • GLENSIDE, PENNSYLVANIA • U. S. A.

• *for marking*

silk • plush • wool
nylon • rayon • cotton
orlon • worsted • underwear • jersey cloth
mixed goods

• *in dye houses*
• *bleacheries*
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Cable Address "NISSEN" PHILA.

BALL POINT

Nissen all-purpose marking inks

dye resist • fulling
bleach proof • caustic proof

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JOHN P. NISSEN, JR., CO.
Manufacturers • Textile Marking Inks
Glenside, Pa.

TRADE MARK REGISTERED

KLUTTZ Lubri-Cased Rings*
START FAST
LAST LONG

Kluttz Spinning Rings get going fast . . . usually with two travelers in 12½ to 25 hours . . . and at initial speeds of 7000 fpm. Thereafter they will run at any speed the average frame can obtain. Kluttz Lubri-Cased Rings not only have an average wear factor of 25% better than ordinary rings, but they also greatly increase traveler life.

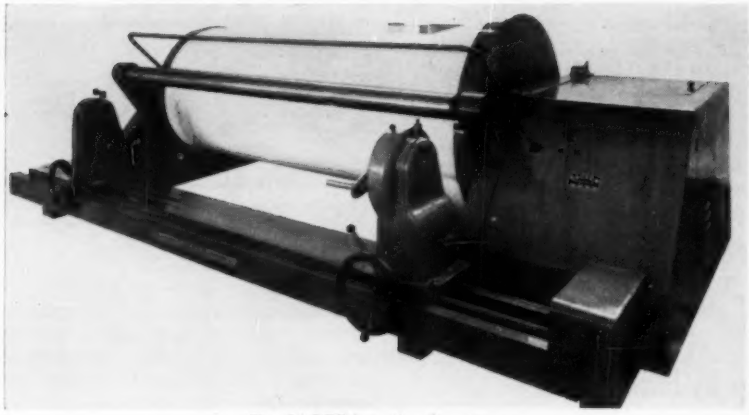
For faster break-ins, higher spindle speeds, and longer service, Kluttz Lubri-Cased Rings have no equals. Write for samples and prices today.

*Trade Name —Patented

Representatives: Thomas H. Watson, Maiden, N. C.; Hugh K. Smith, West Point, Ga.; L. D. Talley, Mexia, Texas
For New England & Canada: Textile Parts, Taunton, Mass.

KLUTTZ RINGS, Inc.
Gastonia, North Carolina

For further information use Handy Return Card, Page 187



The SACFEM sectional warper.

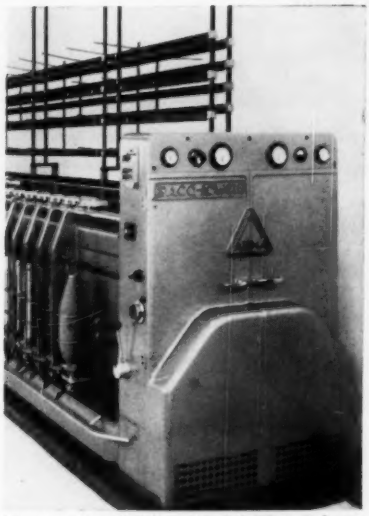
caniche) sectional warper offers these advantages: (1) saves space, as a very small creel is required (usually about 400 ends); (2) saves time in loading and unloading creel; (3) using fewer cones of yarn for a given warp saves considerable time in winding; (4) a more uniform warp is produced—tension is constant and length of each section is the same as this is automatically controlled; (5) high operating speed with fast stopping and starting for efficient operation.

Texstyle Engineering Co., 87 Merrison St., Teaneck, N. J.

Do you want more data? Write supplier or use postage-free card on page 187; list F-128

2 heavy-duty twisters in 1

Coarse yarn mills may increase their flexibility and lower production costs with the Saco-Lowell-Allma



The Saco-Lowell-Allma Model DZ 1 G large package twister.

Model DZ 1 G large-package ring twister which is actually two twisters in one 42"-wide machine, as each side is individually driven. Since two drive motors are utilized, two kinds of yarn can be produced at the same time or one side can be operated

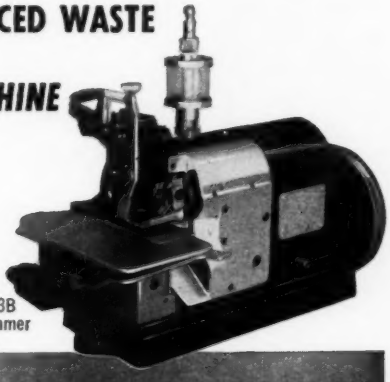
For IMPROVED and SPEEDED processing ... with REDUCED WASTE

MERROW NOW OFFERS ... *IN A SINGLE MACHINE*

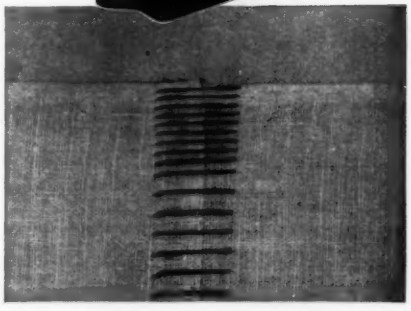
- ***WIDER STITCHING***

plus

- ***MULTIPLE STITCHING AT SELVAGES***



Style 60 Y3B
Butted Seamer



Some processors require a wide butted seam to eliminate "combing out" of coarse material under tension. Others, handling high count materials, need multiple stitching at the selvages for extra strength. Merrow now makes available a machine that fills **both** requirements.

The strong one thread seam (approximately 5/8" wide) is quickly and accurately formed by the high speed machine ... can be easily removed after processing. Result: improved processing ... higher production ... reduced waste.

Request complete information on this or other machines in the Merrow **complete line** of butted seamers.

TRADE MARK REG
The MERROW MACHINE COMPANY
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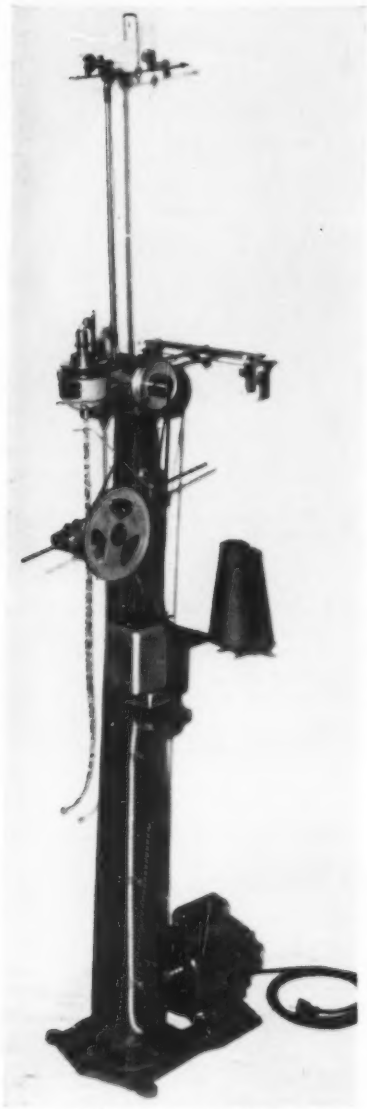

The Ainslie string machine.

while the other stands.

High spindle and traveler speeds are attainable on the machine which winds about 4½ lb of yarn on plain twisting tubes (without flanges). Transparent separators which may be easily removed are provided. Baffles behind spindles protect underframe parts from lint.

Saco - Lowell Textile Machinery Div., Saco-Lowell Shops, Easley, S. C.

Do you want more data? Write supplier or use postage-free card on page 187; list F-129

Jersey tubing knitter

The Ainslie string machine is designed to knit jersey stitch tubing ranging in width from ¼" to ¾". The standard machine has a ¾" cylinder equipped with 8 needles. Finer cylinders are available, and special heads for making tubing from ⅞" to 1½" are built to order.

Single feed with wick feed lubrication to bronze bearing, quick stitch adjustment by thumb screw control of cylinder position, and direct motor drive are some of the construction features.

Ainslie Knitting Machine Co., 740-750 Grand St., Brooklyn 11, N. Y.

Do you want more data? Write supplier or use postage-free card on page 187; list F-130

Non-slip nylon sewing thread

Sewing costs are reduced, production is increased, and finished products (sweaters, sport shirts, etc.) are improved when nylon and Dacron "Stitchlok" sewing threads are used. This continuous filament thread has surface characteristics of cotton threads, because of the thousands of tiny loops on its surface; consequently, stitches remain firmly in place. Muted sheen of dyed items blends into garments, making the thread very much less noticeable. Seams are stronger and wear longer.

Note tiny loops on "Stitchlok" sewing thread at top and smooth surface of conventional thread below.

Synthread Division, The Mason Silk Co., 40 E. 34th St., New York 16, N. Y.

Do you want more data? Write supplier or use postage-free card on page 187; list F-131

Avoid overdrying of knitgoods

An electronically-operated precise time and temperature control for drying tumblers avoids the damaging of knit goods (garments or pieces) by excessive heat or drying time.

Mounted on the drying tumbler, the device operates a solenoid steam valve, automatically opening and closing it as required to constantly maintain the desired temperature in the dryer. A timing device operating in conjunction with the temperature control stops the tumbler motor when the goods have been in the machine for the predetermined period of time.

Henrici Laundry Machinery Co., Henrici St., Mattapan Sta., Boston 26, Mass.

Do you want more data? Write supplier or use postage-free card on page 187; list F-132

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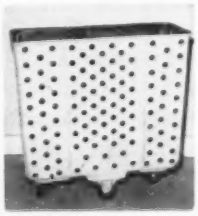

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Special containers include dye box on casters, spinning doff boxes, conditioning boxes, dye buckets and batch containers in 15, 20, 25, 30, 40, 50 and 55 gallon sizes. Prices, literature upon request.

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FREE BOOKLETS

6-1 DOLLY WASHER CONTROL—Application engineering data sheet gives complete information and description of application for automatic Dolly Washer Control System. Handles scouring, rinsing, adds chemicals, controls washer level, etc. Foxboro Company, Foxboro, Massachusetts.

6-2 ROTARY PRESSURE JOINTS—Booklet describes rotary pressure joints for use by the textile industry. Schematic diagrams, friction, curves and application. The Johnson Corporation, Three Rivers, Michigan.

6-3 FRAME AND OVERHEAD CLEANER—Brochure describes "TravelBlo" and "TravelVac" for prevention of lint build-up on frame and overhead surfaces. Parks-Cramer Company, Fitchburg, Massachusetts.

6-4 MATTERS OF FACTORING—Booklet makes use of an imaginary case history to define factoring, discusses cost, and explains how the factor works. Trust Company of Georgia, Factoring Department, Edgewood at Pryor Streets, Atlanta, Georgia.

6-5 HUNT LET-OFF—Brochure explains what the Hunt Let-Off is and what it can do for your mill as a simple, smoothly-operating positive warp let-off motion. Southern Machinery Company, Box 3217, Station A, Greenville, South Carolina.

6-6 MOTOR COUPLINGS—Publication brings together all pertinent data on Link-Belt "Type MC Geared Flexible Motor Couplings", including three new features. Link-Belt Company, Department PR, Prudential Plaza, Chicago, 1, Illinois.

6-7 STORAGE WATER HEATERS—Bulletin lists storage and heating capacities, dimensions and material thicknesses for various storage water heaters. Bulletin No. 1234, Patterson-Kelley Co., East Stroudsburg, Pennsylvania.

6-8 TEXTILE PRINTING COLORS—Technical bulletin describes improved methods of preparing textile printing colors, including the use of the Cowles Dissolver in doing so. Morehouse-Cowles, Inc., 1150 San Fernando Road, Los Angeles 65, California.

6-9 GAS-POWERED LIFT TRUCKS—Booklet describes the flexibility of gas power plus the efficiency of electric drive in lift trucks. Automatic Transportation Company, 149 West 87th Street, Chicago 20, Illinois.

6-10 SILICONE CATALOG—Catalog describes the complete line of General Electric silicones and their uses. General Electric Co., Silicone Products Department, Waterford, New York.

6-11 REMOVING GREASE-CAKED DIRT—Bulletin describes industrial floor machine which removes stubborn, grease-caked dirt from floors in one operation. G. H. Tennant Company, 721 North Lilac Drive, Minneapolis 22, Minnesota.

6-12 AUTOMATIC WEIGHT SENSING — Reference manual for the application of the automatic weight sensing systems to a variety of production and quality control functions. Exact Weight Scale Company, Department "P", 920 West Fifth Avenue, Columbus 15, Ohio.

6-13 CENTRIFUGAL PUMPS—Bulletin gives complete information on high pressure multi-stage centrifugal pumps with capacities up to 2600 GPM. Goulds Pumps, Inc., 223 Black Brook Road, Seneca Falls, New York.

6-14 SEAL SHIPPING CARTONS—Literature describes "self-setting", self contained machine for tape sealing top and bottom (simultaneously) of shipping cartons. General Corrugated Machinery Company, Palisades Park, New Jersey.

6-15 AFTERCOOLERS—Booklet describes aftercoolers, heat exchangers, cyclone separators and compressed air and gas filters. R. P. Adams Company, 316 East Park Drive, Buffalo 17, New York.

6-16 ELECTRICAL MACHINERY CATECHISM—Bulletin presents in simple form the most important theoretical and practical features of the common types of DC and AC Motors, generators and controls. Fairbanks, Morse & Company, Electrical Division, Department EB, 303 North Henderson, Freeport, Illinois.

6-17 MOTOR APPLICATION GUIDE — Bulletin describes broad line of single phase, three phase and direct current motors, including gearmotors and drives. Century Electric Company, St. Louis 66, Missouri.

6-18 AVRIL STABLE RAYON—Bulletin covers characteristics and properties of stable rayon product, including comparison charts and table relating test data from textile development projects American Viscose Corporation, Technical Service Department, Marcus Hook, Pennsylvania.

6-19 KNITTING ENKA NYLON—Booklet gives information that every knitter handling Enka nylon should know, including merchandising programs to help sell Enka nylon products. American Enka Corporation, Enka, North Carolina.

6-20 SPEED MEASUREMENT SYSTEMS—Bulletin describes complete line of a-c and d-c tachometer generators and indicators. General Electric Company, Schenectady 5, New York.

BOOKLETS

raw stock to roving

T-101 **LUMMUS PEPPER - SHAKER OPENER.** Gives complete details and photographs. Aldrich Machine Works, P. O. Box 750, Atlanta, Ga.

T-102 **STATIC ELIMINATION.** How to eliminate static safely and inexpensively. Simco Co., 920 Walnut St., Lansdale, Pa.

T-105 **VERSA - MATIC DRAWING FRAME.** Describes drafting elements, quality of sliver, roving and yarn possible. Saco-Lowell Shops, Textile Machinery Div., Easley, S. C.

T-106 **SARGENT OPENER.** Describes opener with rotary evener and stripper. C. G. Sargent's Sons Corp., Graniteville, Mass.

T-107 **FEATHERTOUCH DRAFTING.** How to get "highest production per frame at lowest cost." Ideal Industries, Inc., Bessemer City, N. C.

T-112 **ADVANTAGES OF ALDRICH PICKERS.** Good technical text, comprehensive pictures. Aldrich Machine Works, P. O. Box 750, Atlanta, Ga.

T-113 **NEW CONDENSER TAPE.** Describes Supr-O-Tape, an impregnated fabric condenser tape. Benjamin Booth Co., Allegheny Ave. & Janney St., Philadelphia 34, Pa.

T-119 **FIBER METER.** Automatic weighing and blending assures quality, holds variation to 1%. James Hunter, Inc., P. O. Box 298, Mauldin, S. C.

T-120 **PIN DRAFTERS.** Textile job report No. 21 tells how Warner & Swasey Pin Drafters help modify jute systems for carpet yarns. Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio.

T-121 **UNIVERSAL CARD COILER.** Literature describes both head and base swivel for adjustment. Includes data on 90-day free trial. McDonough Power Equipment, Inc., McDonough, Ga.

T-122 **RECONDITION OPENING & CLEANING.** Bulletin gives whys and wherefores of reconditioning your opening and cleaning lines. Special attention given to each machine with suggestions as to parts replacement. Saco-Lowell Shops, Replacement Parts Div., Box 327, Greenville, S. C.

T-123 **COILER CONVERSIONS.** Full facts on low initial cost conversion to larger coiler cans. Lists advantages, has complete description. Southern States Equipment Corp., Hampton, Ga.

T-124 **CARD DRIVE.** Bulletin 301-a describes simple, safe, efficient individual card drive. Southern States Equipment Corp., Hampton, Ga.

T-132 **PROCTOR SUPER PICKER.** Data sheet gives details of the Proctor Super Picker for use on slabs of baled cotton, or wool and synthetic blends in layers up to 12" thick. Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.

yarn and warp making

T-201 **PRODUCTS FOR SPINNING AND WEAVING.** Complete line, applications, advantages shown. Dayco Corp., Textile Div., Dayton, Ohio.

T-202 **NEW BOBBIN MANUAL.** Complete bobbin guide. Lestershire Spool Division, National Vulcanized Fibre Co., Wilmington 99, Delaware.

T-203 **SPINDLE OIL.** "Gulfspin" insures against excessive wear and eliminates spindle wobble. Gulf Oil Corp., Gulf Bldg., Houston, Texas.

T-205 **HIGH SPEED AUTOMATIC QUILLER.** Lists advantages and dimensions of "Autocopser." Terrell Machine Co., Inc., P. O. Box 928, Charlotte, N. C.

T-208 **PACKAGED SPINNER MODERNIZATION.** Details on Collecto-Vac, Open-Aire Creels, Cross-Jet Cleaner, Air Conditioning Bahnson Company, Winston-Salem, N. C.

T-209 **SECTIONAL WARPER.** Describes full width and sectional warpers for knitting, weaving. Robert Reiner, Inc., Weehawken, New Jersey.

T-210 **CONICAL RINGS AND FLYERS.** Complete details and specifications. Herr Manufacturing Co., Inc., 318 Franklin St., Buffalo 2, New York.

T-211 **PRECISE WINDING MACHINE.** For winding pineapple or straight cones and tubes of synthetics. Foster Machine Co., Westfield, Mass.

T-212 **AUTOMATIC - CLEANING EQUIPMENT.** Working details and advantages of the Tri-Rail Cleaner. American MonoRail Co., 111 East 200th St., Cleveland 17, Ohio.

T-216 **SPINNING FRAME CONVERSIONS.** Big-package, new frame results at half the cost. Meadows Mfg. Co., P. O. Box 10876, Station A, Atlanta, Ga.

T-217 **COLLECTO-VAC.** New development collects line, fly and broken ends. The Bahnson Company, Winston-Salem, N. C.

T-219 **SPINNING AND TWISTER RINGS.** Complete details, pictures, price list. Whitinsville Spinning Ring Co., Whitinsville, Mass.

T-223 **FACTS ABOUT YOUR FLYERS AND SPINDLES.** Advantages of smooth flyer and spindle operation. Ideal Machine Shops, Bessemer City, N. C.

T-227 **SPINDLE OILING MACHINE.** Features and advantages noted. Wicaco Machine Corp., 4800 Stenton Ave., Wayne Junction, Philadelphia 44, Pa.

T-228 **HANDY SPINNING REFERENCE.** Shows traveler speeds, sizes of ring flanges. Saco-Lowell Shops, Parts Replacement Division, P. O. Box 327, Greenville, South Carolina.

T-229 **UNIRAIL UPTWISTER.** Higher yarn quality and better packages at faster speeds. Leesona Corp., P. O. Box 1605, Providence, R. I.

T-230 **PRECISION TEXTILE WINDING.** Tensions and density control for winding rubber cones. Kidde Textile Machinery Corp., Farrand St., Bloomfield, N. J.

T-231 **CONE WINDER.** Describes Model 102 winder, including applications. Foster Machine Co., Westfield,

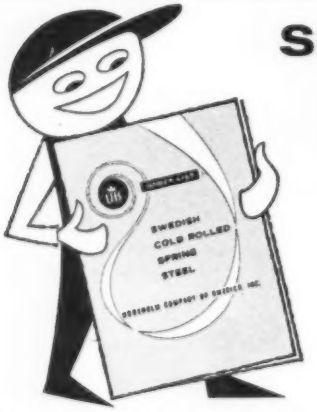
T-232 **SHORT CUT TO STAPLE FIBER SPINNING.** Ten steps in operation of the Tow Stapler. Turbo Machine Co., Lansdale, Pa.

T-233 **WEAVER'S KNOTTER.** Instructions as to use, description. A. B. Carter, Inc., Gastonia, N. C.

T-234 **TEXTILE ROLL COVERINGS.** Describes complete line as well as other mill supplies. Armstrong Cork Co., Industrial Div., Lancaster, Pa.

T-239 **LARGE PACKAGE TWISTER.** Information on new anti-friction Jumbo Twister which carries a 14" bobbin with a 12" build. Meadows Mfg. Co., P. O. Box 10876, Sta. A. Atlanta, Ga.

T-241 **PACEMAKER TWISTERS.** Folder gives details on high produc-



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BOOKLETS

tion, outlines notable features. Whitin Machine Works, Whitinsville, Mass.

T-242 **RING SPINNING FRAME.** Folder presents description, illustrations and specifications of up-to-date Simplex ring spinning frames. Davis & Furber Machine Co., North Andover, Mass.

T-243 **ANTI-FRICTION TWISTER BEARINGS.** Find out how bearings helped make The Meadows Twister almost friction-free. Fafnir Bearing Company, New Britian, Conn.

T-246 **BETTER BEAMS.** Information on three ways to make better beams. Kidde Textile Machinery Corp., Farrand St., Bloomfield, N. J.

T-250 **SPINNING MODERNIZATION.** Booklet shows how lower costs and improved quality are obtained by spinning modernization. Roberts Company, Sanford, N. C.

T-255 **NEW BOBBIN HOLDER.** Details on streamlined, positive latching bobbin holder. Whitehead Die Casting Co., 1140 Zonolite Rd., Atlanta, Ga.

T-256 **HUMIDIFIER PROTECTION** — Brochure tells how "Rustex" can stop rust and corrosion and prevent discolored water in your humidifying system. Odorless and completely harmless to personnel, or goods. Anderson Chemical Co., Inc., Box 1424, Macon, Georgia.

T-257 **COMETSA SPINDLES.** Bulletin gives details of high-precision, vibration free Cometsa spindles. Mr. Edward B. Rock, Terry Hill Road, Lake Carmel, New York, N. Y.

slashing—weaving—tufting

T-301 **COUNTING AND MEASURING DEVICES.** Wide range of counting devices for all types of textile machinery. Veeder-Root, Inc., Hartford, Conn.

T-302 **LOOM SUPPLIES.** Describes complete line. E. H. Jacobs Mfg. Co., P. O. Box 3096, Charlotte, N. C.

T-304 **LOOM PRODUCTION CHARTS.** Celluloid card shows yards per loom per week. Ralph E. Loper Co., Greenville, S. C.

T-306 **THE STORY OF STARCHES.** History and information on manufacture and use of starches National starch & Chemical Corp., 750 Third Ave., New York 17, N. Y.

T-309 **PENFORD GUMS IN TEXTILES.** Describes their excellent properties for warp sizing spun yarns. Penick & Ford Ltd., Inc., 750 Third Ave., New York 17, New York.

T-314 **LOOM REED BOOKLET.** Describes in detail a variety of reeds. Steel Heddle Mfg. Co., 2100 West Allegheny Ave., Philadelphia 32, Pa.

T-315 **COCKER EQUIPMENT.** Information on warp sizer, beam warper, creels, tensions, back-winders, etc. Cocker Machine & Foundry Co., Gastonia, N. C.

T-318 **FORMULAS FOR SLASHING ARNEL.** Includes also information on warping, weaving and quilling. Textile Sales Dept., Celanese Corp. of America, P. O. Box 1414, Charlotte 1, N. C.

T-319 **ECLIPSE STARCHES FOR TEXTILES.** Data sheet describes use of thin-boiling starches in the textile industry, with particular emphasis on warp sizing. Physical and chemical data included. A. E. Staley Mfg. Co., Decatur, Ill.

T-321 **COCKER SLASHERS.** Complete specifications and advantages, including allied equipment. Cocker Machine & Foundry Co., Gastonia, N. C.

T-322 **MOUNTS FOR LOOMS.** Vinyl mount eliminates need for bolts or paste. Clark, Cutler, McDermott Co., 106 W. Central St., Franklin, Mass.

T-323 **UNIFIL LOOM WINDER.** Describes new concept of filling preparation which needs no quilling area. Leesona Corp., P. O. Box 1605, Providence, R. I.

T-324 **ALIGNING LAYS.** Setting instructions for step-by-step aligning. Draper Corporation, Hopedale, Mass.

T-325 **TRAVELING LOOM CLEANER.** Advantages of the new Oscillaire loom cleaner. Parks-Cramer Co., Fitchburg, Mass.

T-326 **DRAPER REPAIR PARTS CATALOG.** Contains illustrations covering all mechanisms and construction with complete listings. Draper Corporation, Hopedale, Mass.

T-328 **TEXTILE MACHINERY PARTS CATALOG.** Describes complete line of Dayco and Thorobred textile parts. Dayco Corp., Dayton, Ohio.

T-329 **COUNTING DEVICES.** Describes complete line of counters for every application. Trumeter Company, 38 W. 32nd St., New York 1, New York.

T-331 **STATIC BARS.** Humorously illustrates how static can be overcome. The Simco Co., 920 Walnut St., Lansdale, Pa.

T-332 **CARE OF DRAPER SHUTTLES.** Describes how longer, trouble-free service may be obtained. Draper Corporation, Hopedale, Mass.

T-346 **FACTS ON NONWOVENS.** Fact file on non-wovens tells of new machinery, new methods of handling fibers, new bonding agents, etc. Curlator Corporation, Textile Division, East Rochester, N. Y.

T-347 **New DRYING SYSTEM.** Describes high capacity, custom engineered drying equipment for tufted plants. Dalton Sheet Metal Co., Inc., Dalton, Ga.

T-351 **AUTOMATIC STOP MOTION.** Complete information available on automatic stop motion for Titan warp tying-in machine. Edda International Corp., 468 Fourth Ave., New York 16, N. Y.

T-353 **BACKING FOR TUFTEDS.** How to get your tufting necessities with one telephone call. Fulton Cotton Mills, P. O. Box 1726, Atlanta 1, Ga.

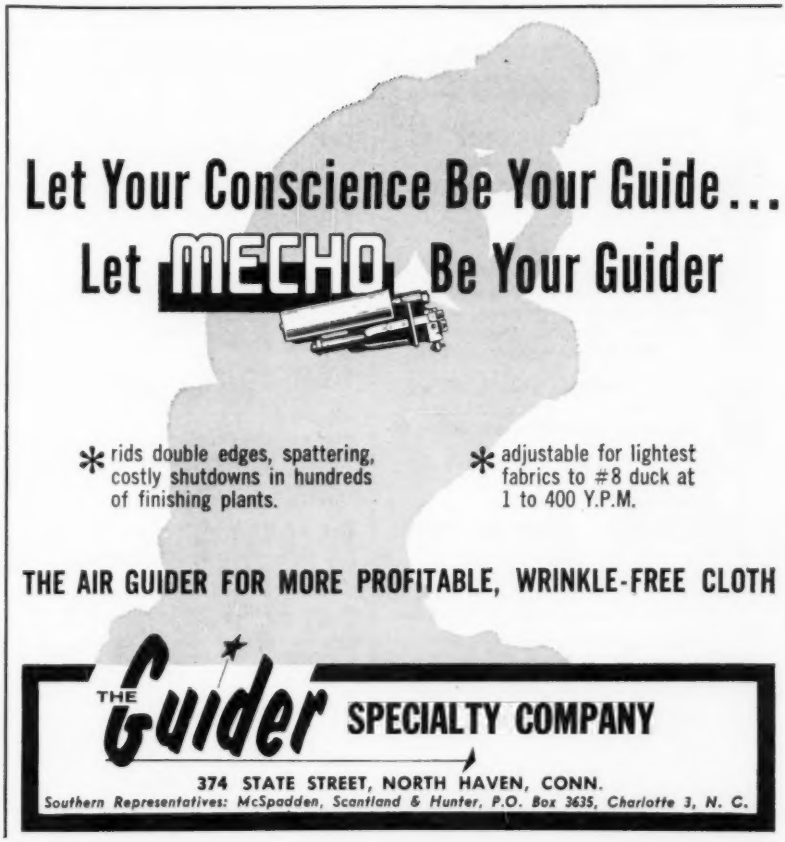
T-355 **NON-WOVEN FABRICS.** Booklet gives outline of nature and history of non-woven and the manufacturing techniques of today. Booklet 56-219A. Chemical Div., Goodyear Tire & Rubber Co., Akron 16, Ohio.

T-358 **LOOM SUPPLIES.** Information on rod lubricant and applicator, sponge leather bunter, picker. Garland Mfg. Co., 54 Water St., Saco, Me.

T-362 **SIZE THAT SATISFIES.** Information on getting the correct size package for your mill. Also on Bingham line of slasher rolls. Stodghill & Co., 716 Ponce de Leon Place, Atlanta, Georgia.

T-363 **RUBBER COVERED SLASHER ROLLS.** Handy booklet tells how to get longer life and better performance from rubber covered rolls. Includes data on handling storing and grinding. Stowe-Woodward, Inc., Dept C., 181 Oak St., Newton Upper Falls 64, Mass.

T-364 **CONTINUOUS STARCH COOKER.** Booklet shows how the use of continuous cookers for starch assures accurate control, economy, low maintenance in warp sizing and finishing. Clinton Corn Processing Company, Clinton, Iowa.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BOOKLETS

knitting

T-403 RASCHEL KNITTER. Describes new Raschel-type knitting machine. Kidde Textile Machinery Corp., Inc., Farrand St., Bloomfield, N. J.

T-406 NEEDLE OIL DOES NOT STAIN. Details on "Gulftex 39" developed for knitting mills. Gulf Oil Corp., Gulf Bldg., Houston, Texas.

T-407 KNITTING MACHINES. Information on Wildman "TFS" 30" single section F-F machines and "AL" 30" diameter 32-feed "single purpose" circular interlock machine (rib type) Wildman-Jacquard Div., Draper Corp., Hopedale, Mass.

T-410 "READING" TYPE 60 F-F KNITTING MACHINE. Information about the new "Reading" Type 60, 28-section automatic full-fashioned hosiery knitting machine. Write Textile Machine Works, Reading, Pa.

wet processing

T-500 WEBB GUIDE SYSTEMS. Folio No. EG-84 describes webb guide systems for cloth applications. G.P.E. CONTROLS, INC., 240 E. Ontario St., Chicago 11, Ill.

T-502 FINISHING MACHINERY. Text and photographs of complete line of machinery. Marshall and Williams Corp., 46 Baker St., Providence, R. I.

T-503 WATER ANALYSIS. Includes tables, conversion factors, indicators, standard solutions. Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

T-504 UREA FORMALDEHYDE. Literature on urea formaldehyde or U.F. concentrate-85. Dept. CUFI-29-1. Nitrogen Div., Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-506 CATIONIC SURFACE ACTIVE AGENT. Describes Uversoft "D." Harshaw Chemical Co., 1945 East 97th St., Cleveland 6, Ohio.

T-508 PEROXIDE BLEACHING SYSTEM. Illustrates and describes this continuous system. E. I. du Pont de Nemours & Co., Electrochemical Dept., Wilmington, Del.

T-510 TEXTILE CHEMICALS. Describes leading products for wet processors. Royce Chemical Co., Carlton Hill, N. J.

T-512 DEPUMA. Decribes odorless, viscous, non-evaporating emusion for anti-foam. Koppers Co., Inc., Chemicals & Dyestuffs Div., Porter Bldg., Pittsburgh 19, Pa.

T-513 CATALYST AC-6. Tells how curing efficiency may be stepped up as much as 25%. Monsanto Chemical Co., Plastic Division, Springfield 2, Mass.

T-514 SODA ASH BULLETIN. Contains useful data covering this subject. Solvay Sales Division Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-516 ALUMINUM CHELATE PEA-1. Technical data sheet tells how aluminum Chelate PEA-1 may be used with advantage in many applications where aluminum in proplate is unsatisfactory. Harshaw Chemical Co., 1945 East 97th St., Cleveland 6, Ohio.

T-517 CHEMICAL CATALOG. Lists products with chemical composition, properties and applications. Antara Chemicals Div., General Aniline & Film Corp., 435 Hudson St., New York 14, New York.

T-519 HYDRAULIC POWER UNITS. Describes unit for operating hydraulic textile machines. B. F. Perkins & Son, Inc., Holyoke, Mass.

T-522 CUT WATER TREATMENT COSTS. Describes the control of scale, slime, algae and corrosion. Oakite Products, Inc., 126C Rector St., New York 6, New York.

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plant operation

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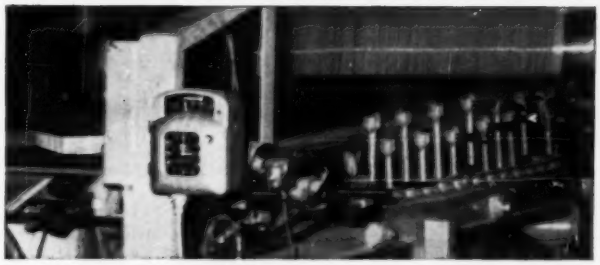

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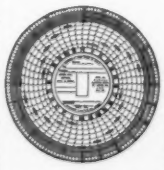

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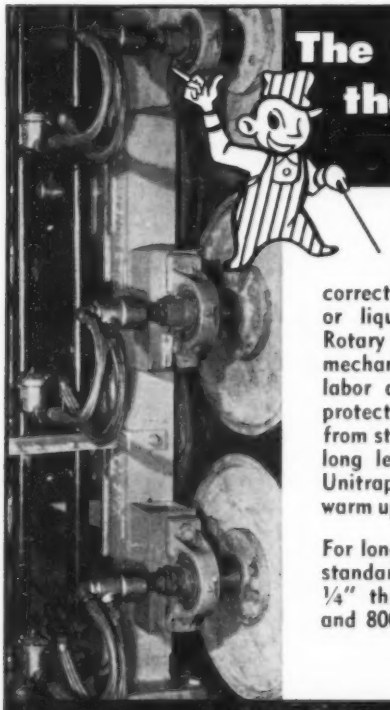

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T-908 TEXTILE MOTORS. Bulletin describes complete line of textile motors. Diehl Mfg. Co., Finderne Plant, Somerville, N. J.

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T-918 PAINT STRIPPING BOOKLET. Explains simplified method of stripping paint. Oakite Products, Inc., 22 Thames St., New York 6, New York.

T-921 CATALOG OF NEEDLE BEARINGS. Design, application for five types of needle bearings. The Torrington Co., Torrington, Conn.

T-924 BALL BEARINGS FOR TEXTILE MACHINERY. Bearings for all phases of textile processing. The Fafnir Bearing Co., New Britain, Conn.

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T-932 SMOOTH ACCELERATION, DECELERATION. Describes eddy-current equipment for smooth, stepless acceleration and deceleration. Eaton Mfg. Co., 3307 14th Ave., Kenosha, Wis.

T-937 V-BELTS. Tells how raw materials and finished belts are tested and inspected. Quality control and experimental production covered. Booklet 5-51107, Dept. 794, Goodyear Tire & Rubber Co., Akron 16, Ohio.

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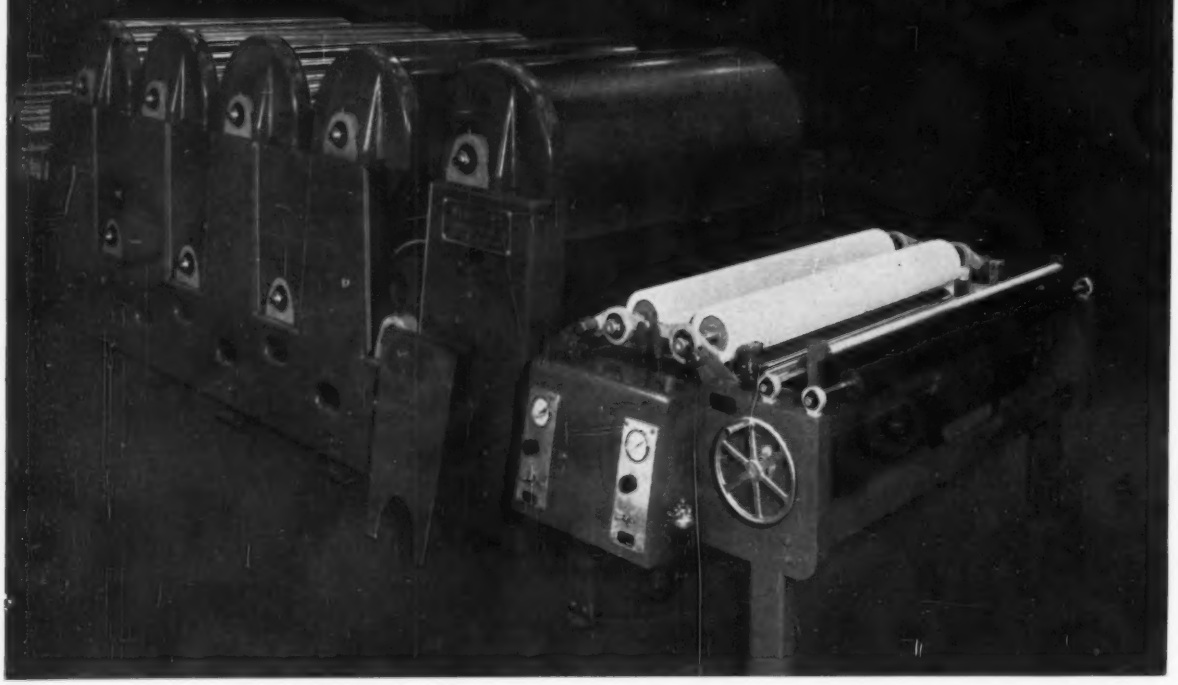

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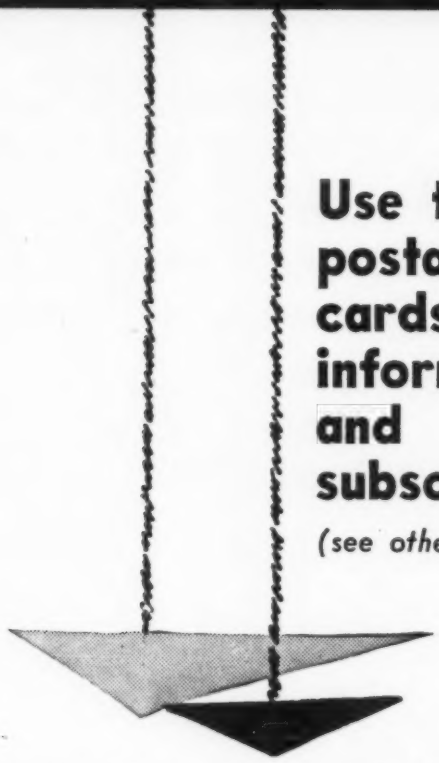

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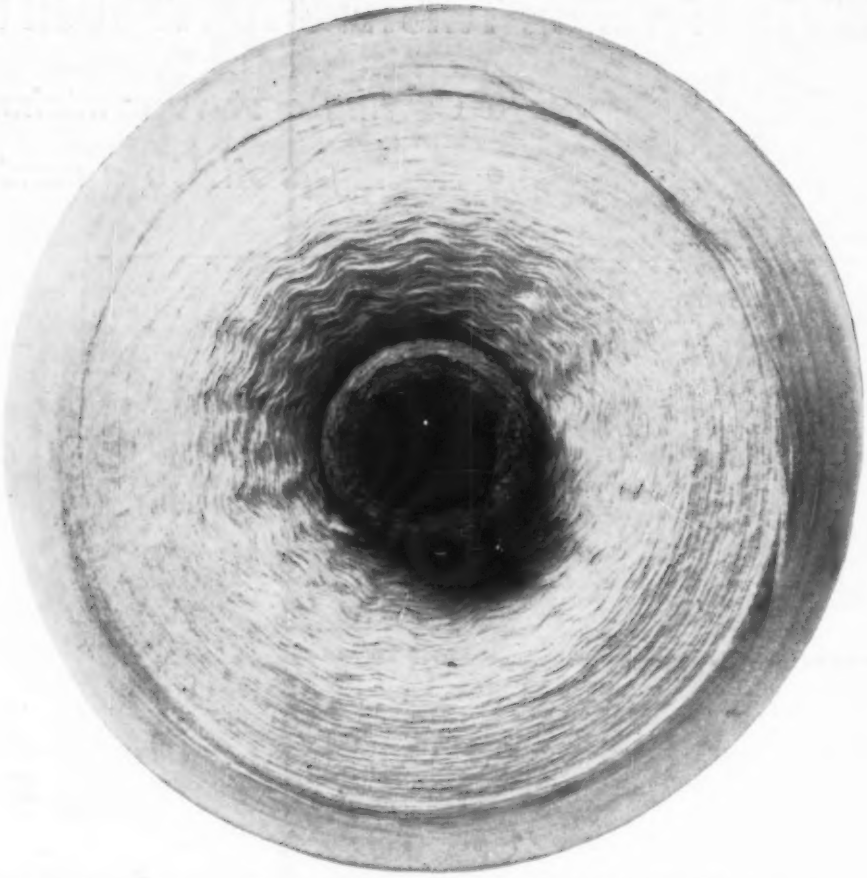

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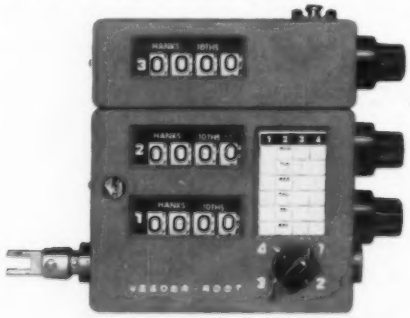

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